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ABSTRACT

In order to meet the state of Minnesota's goals for environmental education, the 1993 Environmental Education Plan identifies philosophical principles, audiences, outcomes, and strategies for action to guide environmental education in Minnesota over the next 10 years. The plan is presented in seven sections. Section I is an introduction to the plan. Section II identifies recommendations for the Minnesota legislature and focuses on funding and policy direction. Sections III and IV identify priority audiences and provide related background information, needs, partnership strategies, and environmental education strategies for the following groups: preK-12 students, higher education students, government officials and boards, consumers, producers/landowners, regulated community, business community, outdoor recreational resource users, citizen and youth groups, and religious groups. In addition, the ten year work plan for the Office of Environmental Education and the Environmental Education Advisory Board is outlined. Section V contains guidelines for providing programs for people from specific cultural or demographic backgrounds and for people with varying abilities. Section VI profiles providers of environmental education in Minnesota. Section VII discusses the continuing planning and evaluation process. (LZ)

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A GreenPrint for Minnesota

State Plan for Environmental Education

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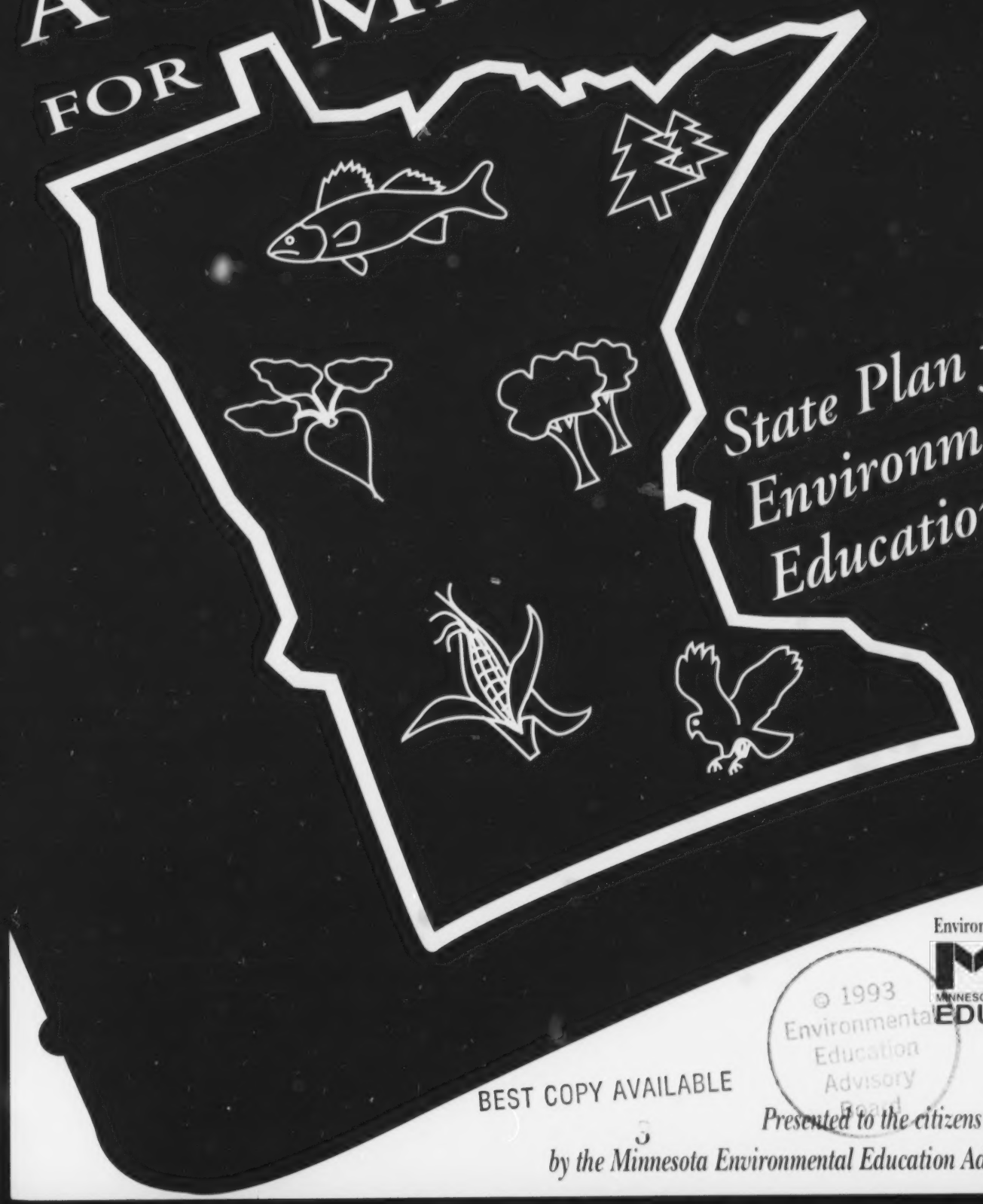
June 1993

Presented to the citizens of Minnesota
by the Minnesota Environmental Education Advisory Board

A GreenPrint for Minnesota



State Plan for Environmental Education

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Presented to the citizens of Minnesota
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A GreenPrint for Minnesota: State Plan for Environmental Education was prepared by the Office of Environmental Education under the direction of the Minnesota Environmental Education Advisory Board:

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The Board expresses its appreciation to the many agencies, organizations, and citizens of Minnesota that have participated in the preparation of the plan. The Board also acknowledges the contribution of the Department of Natural Resources in providing editorial oversight to the final document.

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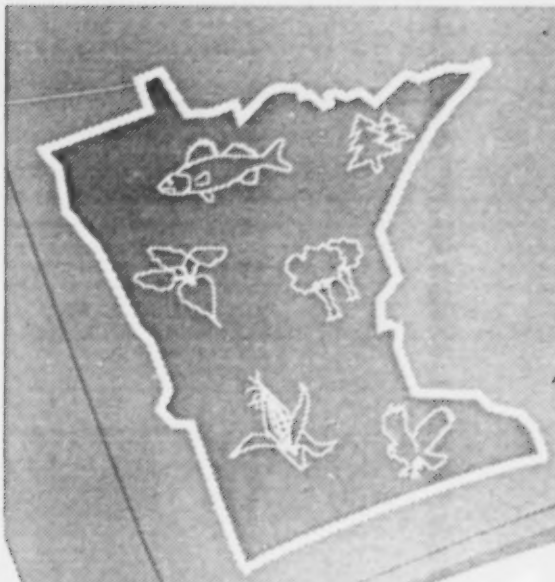

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Appendix

(Available under separate cover. Individual sections available. Copies available upon request from the Department of Education, Office of Environmental Education, 550 Cedar Street, St. Paul, Minnesota 55155, 612/297-2228.)

A. Preparing the Plan

B. Guidelines: Establishing an Environmental Education Clearinghouse and Resource Centers

C. Guidelines: The Role of Media

D. References Cited in the 1993 Environmental Education Plan

E. Selected Resources

F. Historical Overview of Environmental Education in Minnesota

G. National Environmental Education Perspective

H. Chapter 126A - Environmental Education

I. Sample Act - Environmental Education Act

J. Summary of Environmental Education Literature Search, 1993

K. Environmental Education in Minnesota Survey, 1991

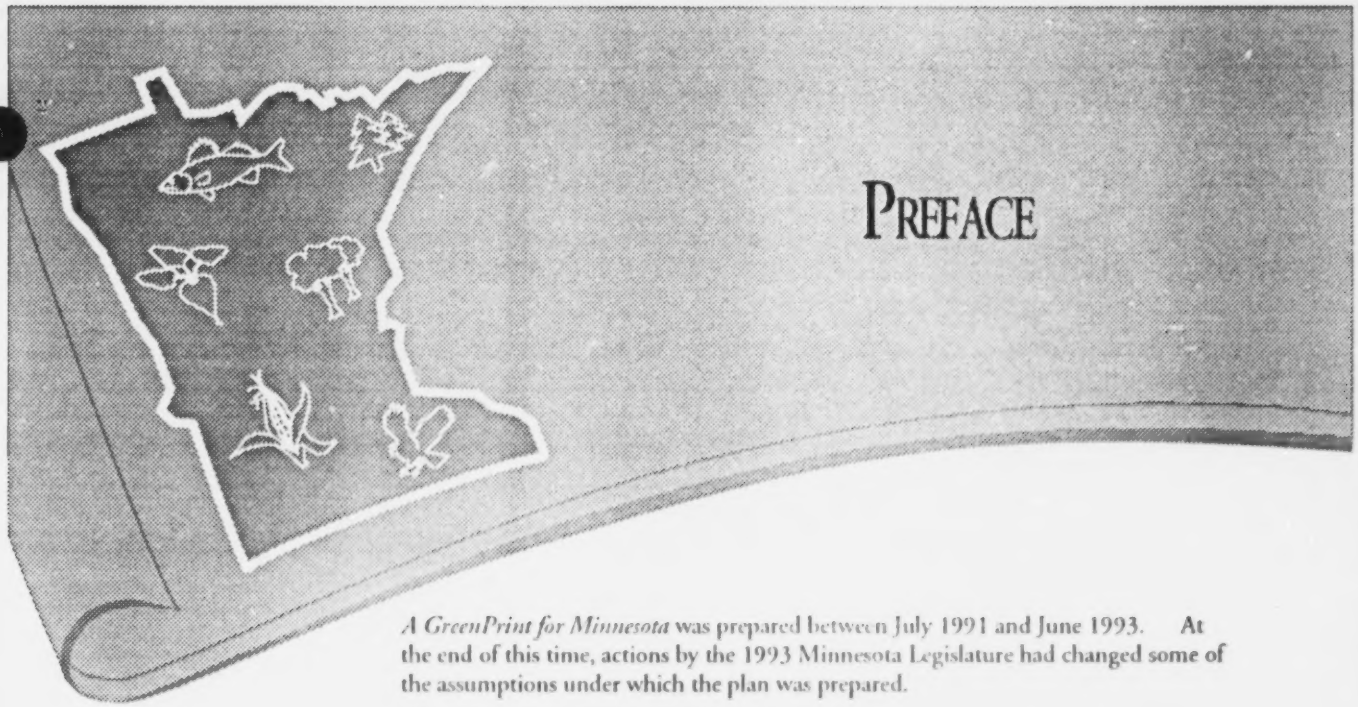
L. Survey of K-12 Environmental Education Teacher Contacts, 1992

M. Strategic Plan for Establishing the Environmental Protection Agency (EPA) Environmental Education Program, 1991

N. The Tiblisi Declaration

O. The Talloires Declaration

P. Tufts University: Environmental Literacy



PREFACE

A GreenPrint for Minnesota was prepared between July 1991 and June 1993. At the end of this time, actions by the 1993 Minnesota Legislature had changed some of the assumptions under which the plan was prepared.

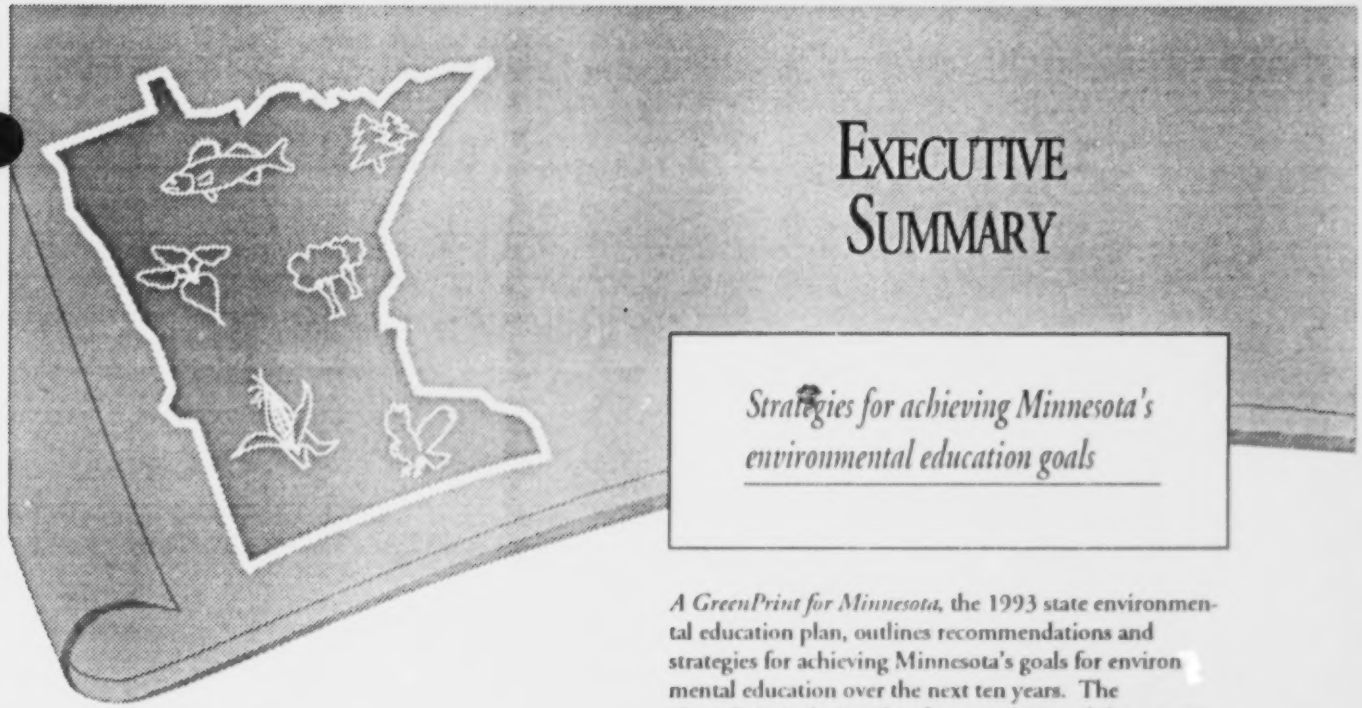
In order to prepare the way for schools to work towards the proposed new graduation rules for K-12 schools (which activate in 1996), the Legislature is currently reviewing and eliminating mandates on schools. As a result of this review, the following changes were made to the 1990 Environmental Education Act (M.S. 126A):

- Additional language has been added to the act that directs the Environmental Education Advisory Board to advise the Commissioner of Education on the proposed graduation rule.
- The sections authorizing a director for the Office of Environmental Education (M.S. 126A.02, subd. 1) and staff and consultant support for the Office (M.S. 126A.03) are eliminated as of June 30, 1993.
- The Act itself (M.S. 126A) will be repealed as of June 30, 1996, with the exception of the section on environmental education resource centers (M.S.126A.06)

Although these changes are significant, the state is continuing its commitment to environmental education by focusing on the proposed K-12 graduation rule. The proposed graduation outcomes include one for environmental education, requiring high school graduates to understand stewardship of the environment. Most, if not all, of the other proposed outcomes also include concepts related to environmental education.

Funding is provided during the 1993-94 biennium to begin distribution of the environmental education model curriculum integration process and to support the activities of the Board.

The recommendations included in the Greenprint are still valid. The recommendations for the Legislature and the recommended outcomes and strategies for the priority audiences will continue to lay a foundation for helping Minnesota achieve its goals for environmental education. The workplan for the Office and Board will continue to be evaluated and revised in response to legislative action over the next ten years.



Executive Summary

Strategies for achieving Minnesota's environmental education goals

A GreenPrint for Minnesota, the 1993 state environmental education plan, outlines recommendations and strategies for achieving Minnesota's goals for environmental education over the next ten years. The *GreenPrint* is designed to foster and expand the partnerships involved in producing and delivering environmental education programs and materials to Minnesota citizens. Partnerships between public agencies and private entities are strongly encouraged. A summary of the major recommendations include:

State Goals for Environmental Education

To understand ecological systems.

To understand the cause and effect relationship between human attitudes and behavior and the environment.

To be able to analyze, develop, and use problem-solving skills to understand the decision-making process of individuals, institutions, and nations regarding environmental issues.

To be able to evaluate alternative responses to environmental issues before deciding on alternative courses of action.

To understand the potential complementary nature of multiple uses of the environment.

To provide experiences to assist citizens to increase their sensitivity and stewardship for the environment.

To provide information citizens need to make informed decisions about actions to take on environmental issues.

Recommendations for the Minnesota Legislature

The Minnesota Legislature should:

- Provide $4 million per biennium to establish grants for environmental education programs and activities;
- Provide $300,000 per biennium over a ten year period for disseminating the environmental education model curriculum integration process established by the Department of Education for K-12 teachers;
- Provide $400,000 to establish one-time grants to higher education model integration to incorporate environmental education into pre-service teacher education programs;
- Provide $1.2 million per biennium to state agencies for the adoption or adaption, expansion, and distribution of PreK-12 environmental education curriculum related to their areas of interest.
- Provide $200,000 per biennium to establish and maintain a clearinghouse for environmental education;
- Provide seed money for the establishment of environmental education resource centers;

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- Appropriate $660,000 to the Department of Natural Resources to be used by state parks for the development of PreK-12 off-school-site environmental education programs;
- Provide $12 million in bonding to establish residential environmental education centers in portions of the state where they do not currently exist;
- Provide $9.6 million in bonding to expand of existing residential environmental education centers;
- Develop and communicate a statewide environmental mission;
- Provide leadership in identifying state priority environmental issues;
- Develop guidelines for environmentally sound behaviors.

Recommendations for the Office of Environmental Education and the Environmental Education Advisory Board

The Office and Board should support environmental education by:

- Providing incentives;
- Encouraging program development;
- Providing information;
- Facilitating networking;
- Serving as advocates for environmental education;
- Tailoring their efforts to meet the needs identified by specific audience groups.

Recommendations for Deliverers of Environmental Education/Priority Audiences

Agencies, organizations, and individuals should work in partnership to develop and deliver environmental education programs consistent with the recommended educational outcomes and strategies identified for the following priority audiences:

PreK-12 Students
Higher Education Students
Government Officials and Boards
Consumers
Producers/Landowners
Regulated Community
Business Community
Outdoor Recreation Resource Users
Citizen and Youth Groups
Religious Groups

The *GreenPrint* is an outcome-based plan. In developing the plan, the Environmental Education Advisory Board identified priority audiences for environmental education and identified and prioritized behavioral outcomes and strategies for each audience. The outcomes are observable, measurable behaviors that demonstrate an increase in environmental literacy. Each outcome contributes to one or more of the state's goals for environmental education.

Overview

The *GreenPrint* gives an overview of current roles, activities, and funding sources of a variety of deliverers of environmental education. The 1990 Environmental Education Act established an Office of Environmental Education and the Minnesota Environmental Education Advisory Board. Currently, the Office and Board are in the Department of Education.

The Board encourages agencies, organizations, and environmental educators to provide access to culturally sensitive and audience appropriate environmental education programs for all Minnesotans. Programs should draw from the rich traditions and life experiences of our culturally diverse populations. Educators should design programs that assure accessibility for people of varying abilities.

The plan describes briefly the environmental education programs, activities, and resources provided by state agencies, local and regional governments, local school districts, higher education institutions, environmental education centers, community education programs, the Minnesota Extension Service, the media, businesses, and various networks and organizations.

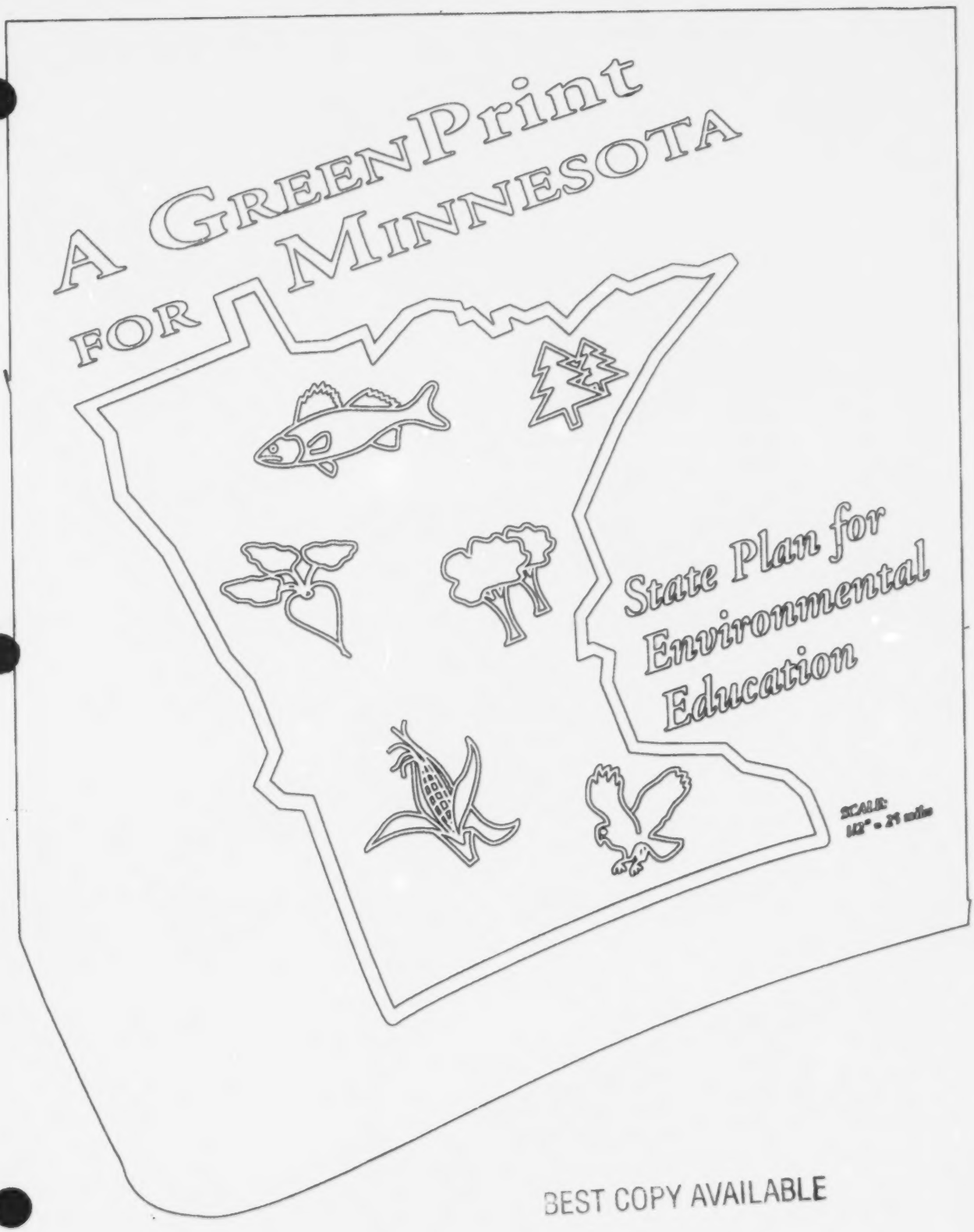
By focusing on common goals and outcomes, those interested in providing environmental education are encouraged to work in partnership to deliver programs, experiences, and materials to various audiences.

Funding for environmental education activities, programs, and materials comes from private and public sources. The Minnesota Legislature provides funding for environmental education activities to projects recommended by the Legislative Commission on Minnesota Resources (LCMR) and by appropriations to state agencies.

The plan is designed to be evaluated and updated over the next ten years by the Environmental Education

Advisory Board. The Board and the Office of Environmental Education will be collecting information on the progress made toward achieving the state's goals, the identified outcomes, and the recommended strategies for environmental education.

The Minnesota Legislature provided funding for the development of the state plan upon recommendation by the Legislative Commission on Minnesota Resources. The Environmental Education Advisory Board was responsible for the development of the plan and staff support was provided by the Office of Environmental Education.



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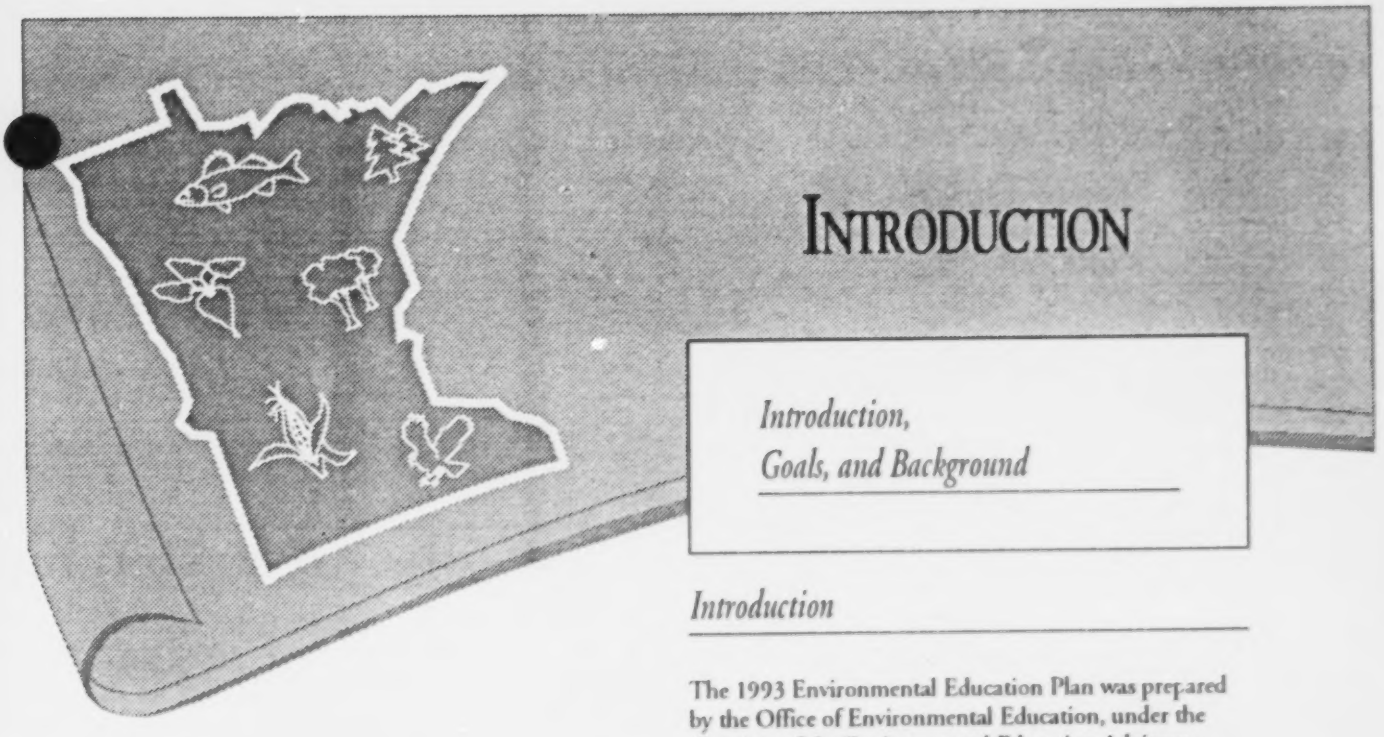


INTRODUCTION

Introduction, Goals, and Background

Introduction

The 1993 Environmental Education Plan was prepared by the Office of Environmental Education, under the direction of the Environmental Education Advisory Board, and with input from Minnesota citizens interested in helping to achieve Minnesota's goals for environmental education.

By passing the 1990 Environmental Education Act, the Minnesota Legislature recognized the need to increase the environmental literacy of its citizens. The Act established state goals for environmental education, created an Office of Environmental Education and an Environmental Education Advisory Board, and outlined duties and processes for providing environmental education to Minnesota students and other citizens (See Appendix, Minnesota Statues 126A.).

The plan identifies three sets of recommendations and strategies for those responsible for helping achieve the state's goals for environmental education:

- The Minnesota Legislature;
- Environmental educators working with specific audiences;
- The Office of Environmental Education and the Environmental Education Advisory Board.

Environmental education programs and activities should be designed for learners of all ages, varying abilities, cultural backgrounds, and places of residence. It is important to draw from and build upon the rich traditions and life experiences of Minnesota's culturally diverse populations.

The plan identifies recommendations for:

- *The Minnesota Legislature*
- *Environmental educators working with specific audiences*
- *The Office of Environmental Education and Environmental Education Advisory Board.*

In preparing the plan, the Environmental Education Advisory Board identified and prioritized the following target audiences for environmental education:

PreK-12 Students
Higher Education Students
Government Officials and Boards
Consumers
Producers/Landowners
Regulated Community
Business Community
Outdoor Recreation Resource Users
Citizen and Youth Groups
Religious Groups

The 1990 Environmental Education Act requires environmental education to be outcome-based. The Department of Education defines an outcome-based educational program as one that:

- Clearly identifies what the student is to learn;
- Measures progress by observing behaviors;
- Accommodates the needs of students by using multiple instructional strategies and assessment tools;
- Provides each student time and assistance to reach his or her potential.

The plan has been prepared in an outcome-based manner. Behavioral outcomes for each audience have been identified. These outcomes are observable, measurable behaviors that demonstrate an increase in environmental literacy. The outcomes are listed in priority order for each audience, and each outcome contributes to one or more of the state's goals for environmental education.

Goals

In the 1990 Environmental Education Act, the Minnesota Legislature adopted seven environmental education goals for students and citizens of the state. The goals were adapted from the Learner Outcome Goals prepared by the Department of Education in 1977 and revised in 1990 by means of a citizen input process.

Minnesota's environmental education goals for pupils and other citizens of the state:

To understand ecological systems.

To understand the cause and effect relationship between human attitudes and behaviors and the environment.

To be able to analyze, develop, and use problem-solving skills to understand the decision making process of individuals, institutions, and nations regarding environmental issues.

To be able to evaluate alternative responses to environmental issues before deciding on alternative courses of action.

To understand the potential complementary nature of multiple uses of the environment.

To provide experiences to assist citizens to increase their sensitivity and stewardship for the environment.

To provide the information citizens need to make informed decisions about actions to take on environmental issues.

In order to meet the state's goals for environmental education, the 1993 Environmental Education Plan identifies philosophical principles, audiences, outcomes, and strategies for action to guide environmental education in Minnesota over the next ten years. In preparing this plan and building on previous environmental education efforts in Minnesota, the Minnesota Environmental Education Advisory Board selected the following mission for environmental education in Minnesota:

To develop a population that has the knowledge, skills, attitudes, motivation, and commitment to work individually and collectively toward sustaining a healthy environment.

Minnesota's environmental education mission corresponds to the U.S. EPA's National Environmental Education Advisory Council's 1992 definition:

Environmental education is the interdisciplinary process of developing a citizenry that is knowledgeable about the total environment, in its natural and built aspects, and that has the capacity and the commitment to engage in inquiry, problem-solving, decision-making and action that will assure environmental quality.

Background

Environmental education in Minnesota has been evolving over the past twenty years. Over that period a series of philosophical principles for environmental education have emerged. Those principles contributed to and expand upon the goals of the 1990 Environmental Education Act.

Minnesota's philosophy of environmental education reflects similarities to and differences between the approaches of other states and the federal government. Although an understanding of ecological systems is essential to, and the basis of, a good environmental education program, in Minnesota environmental education is viewed as more than just science education. An environmentally educated citizen must not only understand the scientific basis of an issue or concept, but must also know how social systems interface with environmental issues and be willing to take action as a responsible citizen.

The philosophical guidelines incorporated into this plan are drawn from the definitions of "environmental education contexts" identified by the Department of Education and from citizen review of current state and national goals for environmental education.

- **The natural context:** An environmentally educated person understands the scientific concepts and facts that underlie an environmental issue and the interrelationship of these realities. This knowledge comes from the study of science including ecology, chemistry, meteorology, geology, astronomy, physics, and biology.
- **The social context:** An environmentally educated person understands how human society is influencing the environment, as well as the economic, legal, and political mechanisms that provide avenues for addressing issues and situations. This knowledge comes from the study of how societies affect and deal with environmental issues, problems, and realities.
- **The valuing context:** An environmentally educated person explores his or her values in relation to environmental issues; and from an understanding of the natural and social contexts, the person decides whether to keep or change those values.
- **The action context.** An environmentally educated person becomes involved in activities to improve, maintain, or restore natural resources and environmental quality.

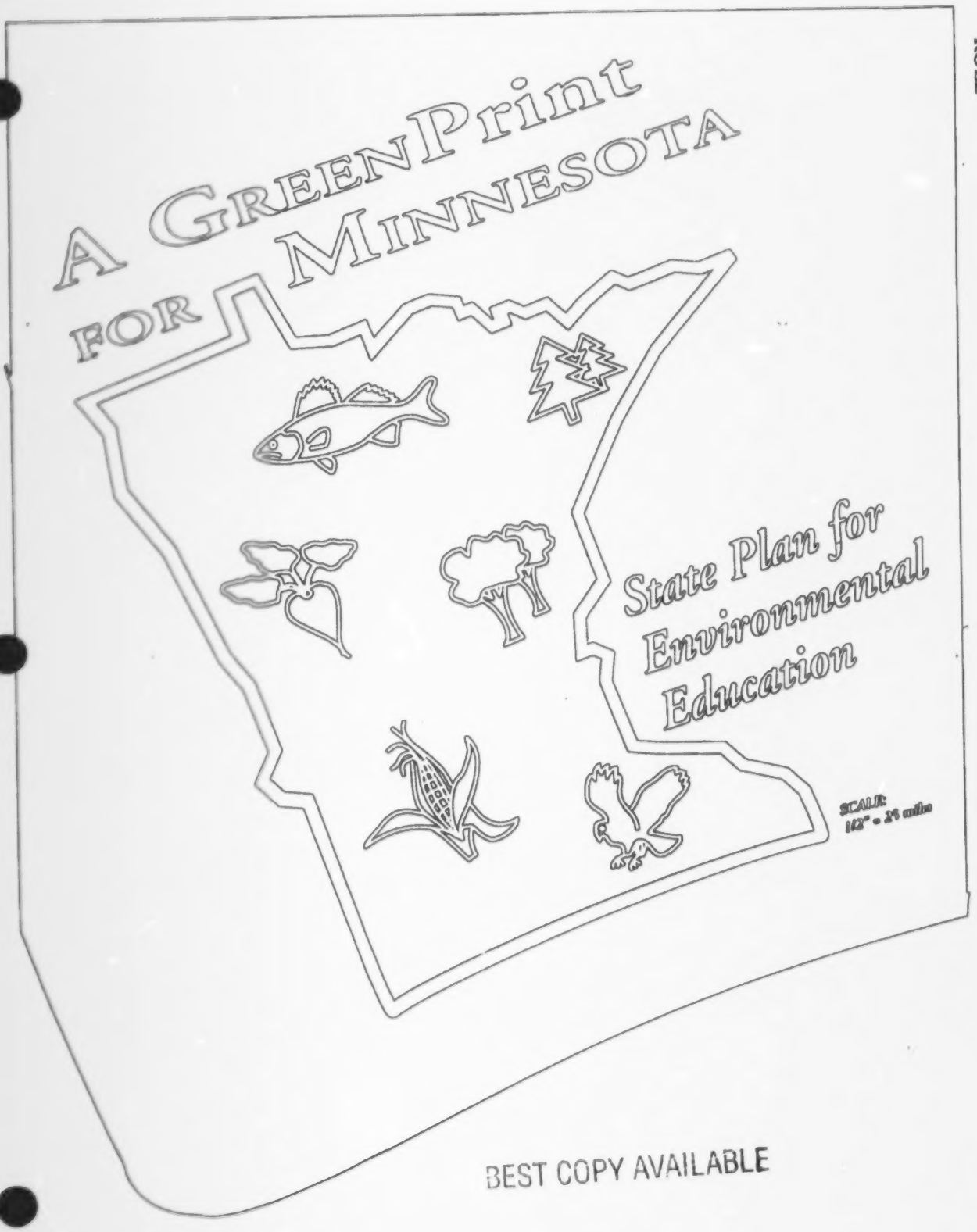
Decision makers and environmental educators should strive to develop environmental education programs for Minnesotans that include the following objectives and characteristics:

- **To develop an environmental ethic, environmental education should:**
  - Examine the impacts of past and current societies and cultures on the environment;
  - Explore the concept of sustainable development, recognizing the impact of population growth, multiple use of resources, economic consequences, and impact on jobs;
  - Raise the level of awareness of environmental degradation and the need for stewardship of the environment;
  - Provide the skills to examine the evidence and weigh the alternatives about environmental issues;
  - Encourage responsible organizational and individual action;
  - Provide opportunities for learning in outdoor settings;
  - Raise awareness of and appreciation for the natural environment.

- **To improve ecological, scientific and technical literacy, environmental education should be based on:**
  - Ecological principles;
  - Current scientific and technical research;
  - Sustainable resource management principles.

- **To ensure that the educational approach is effective, environmental education should:**
  - Be lifelong for all citizens;
  - Be integrated into all education programs;
  - Use a mix of educational disciplines and media;
  - Be designed and delivered in an outcome-based education manner so that it is focused on the individual and is results-oriented;
  - Emphasize experiential, hands-on learning techniques.

- **To provide access to the diverse resources available, the environmental education delivery system should:**
  - Provide citizens a variety of choices of environmental educators and instructional materials;
  - Provide information on public and private resources related to the environment, environmental issues, and instructional methodology;
  - Provide information that supports responsible local decision making.



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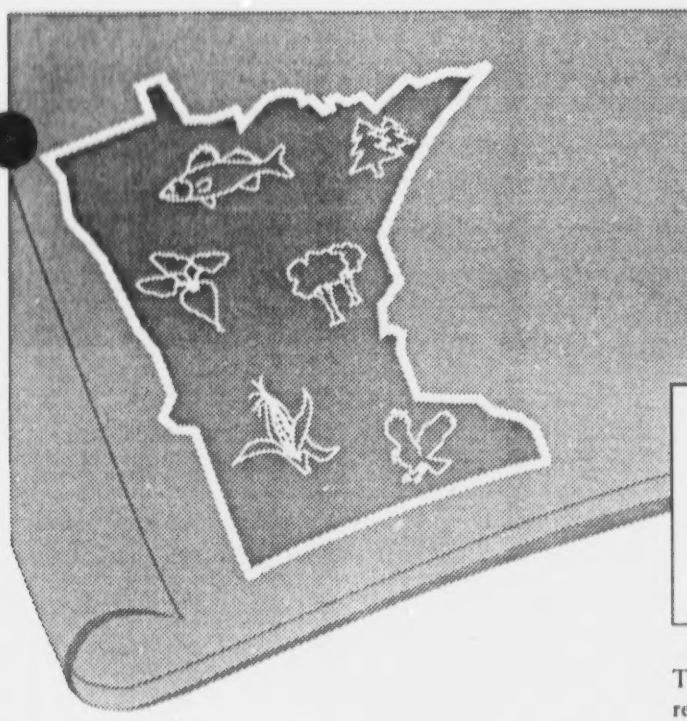

The Minnesota Environmental Education Plan

Minnesota Legislature

The Environmental Education Advisory Board presents recommendations for the next ten years for the Minnesota Legislature, the various deliveries of environmental education, and the Office of Environmental Education and the Environmental Education Advisory Board.

The Minnesota Legislature should provide policy direction, provide environmental education programs through state agencies, establish grants for environmental education programs, and provide capital expenditures for facilities consistent with the priorities and strategies identified in this plan. Deliverers of environmental education should work in partnership with other organizations to develop and deliver programs consistent with the strategies identified in the various audience sections. The Office of Environmental Education and the Environmental Education Advisory Board should promote, monitor, and support efforts to achieve the strategies identified in the plan and serve as advocates for environmental education.

The Minnesota Legislature should provide policy direction, provide environmental education programs through state agencies, establish grants, and provide capital expenditures for facilities.

Recommendations by the Environmental Education Advisory Board for legislative action for a ten year time frame are listed in priority order.

Program Funding:

1. The Legislature should provide $4 million per biennium to establish grants for environmental education programs and activities.
   - Criteria for the use of these funds should be consistent with the priorities and strategies identified in the state environmental education plan.

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- The Office of Environmental Education and the Environmental Education Advisory Board should administer this grant program or provide recommendations regarding the administration of the program.

2. **The Legislature should provide $300,000 per biennium over a ten year period for disseminating the environmental education model curriculum integration process established by the Department of Education for K-12 teachers.**
   - Dissemination of the environmental education model curriculum integration process should provide direct inservice opportunities to Minnesota teachers.

3. **The Legislature should provide $400,000 to establish one-time grants to higher education institutions to incorporate environmental education into pre-service teacher education programs.**
   - One year grants of $10,000 - $15,000 should be provided to each higher education institution seeking to strengthen the environmental education component in teacher education programs or to institutions seeking to develop and disseminate model teacher education programs.

4. **The Legislature should provide $1.2 million per biennium to state agencies for the adoption or adaptation, expansion, and distribution of PreK-12 environmental education curriculum related to their areas of interest.**
   - $400,000 per agency should be provided to a maximum of three state agencies per biennium. Grants should be rotated to different agencies during the ten year time frame.
   - Distribution of environmental education curriculum should provide direct inservice opportunities for Minnesota teachers.

5. **The Legislature should provide $200,000 per biennium to establish and maintain a clearinghouse for environmental education.**
   - The clearinghouse would be the first resource center for environmental education to be established.

6. **The Legislature should provide seed money for the establishment of environmental education resource centers.**
   - Criteria for designating environmental education resource centers should be established by the Environmental Education Advisory Board.
   - One time grants of up to $10,000 should be provided to each organization or agency seeking to be designated an environmental education resource center.
   - Matching funds or in-kind services should be required.

7. **The Legislature should appropriate $660,000 to the Department of Natural Resources to be used by state parks for the development of the PreK-12 off-school-site environmental education programs.**
   - The grants should assist in developing environmental education programs in parks that build on the resources available at the parks and support programs at local schools.
   - The grants could be used to hire additional interpretive staff to develop the programs.

Capital Funding:

1. **The Legislature should provide $12 million in bonding to establish residential environmental education centers in portions of the state where they do not currently exist.**
   - There is a need for residential environmental education centers in the Twin Cities Metropolitan area and the southern and western prairie and agricultural areas of the state.

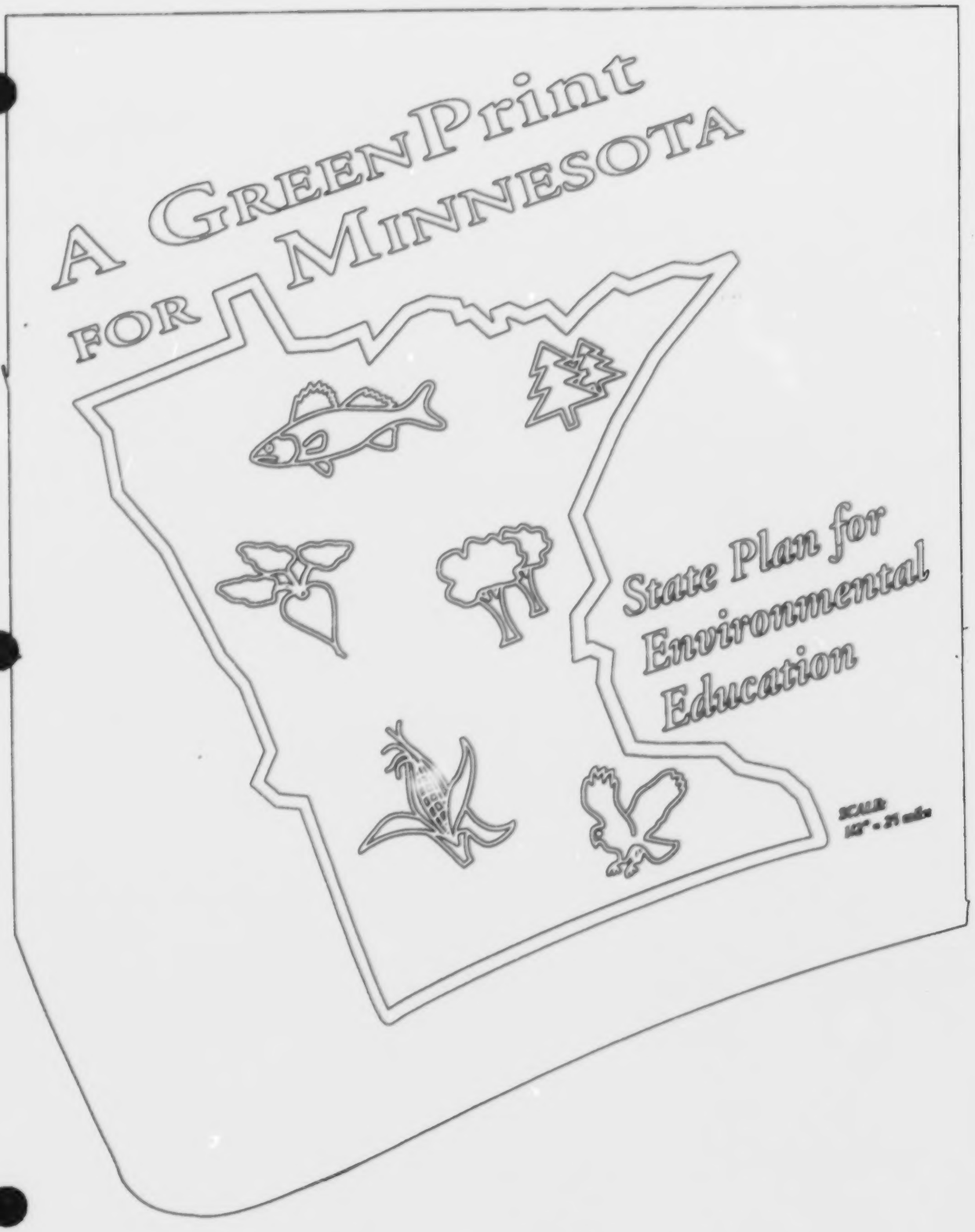
2. **The Legislature should provide $9.6 million in bonding to expand existing residential environmental education centers.**
   - After support has been provided to initiate new residential environmental education centers, assistance should be provided to increase the capacity at existing centers as space is needed.

Policy Direction:

1. **The Legislature should develop and communicate a statewide environmental mission.**

2. **The Legislature should provide leadership in identifying state priority environmental issues.**

3. **The Legislature should develop guidelines for environmentally sound behaviors.**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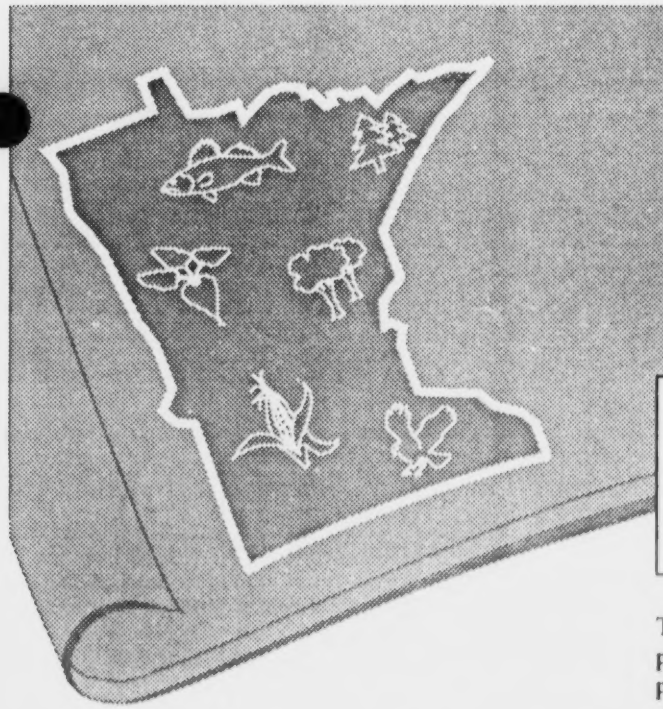

The Minnesota Environmental Education Plan

Deliverers of Environmental Education /Priority Audiences

The Environmental Education Advisory Board identified priority audiences for the state environmental education plan. The outcomes, needs, partnership opportunities, and strategies listed for each audience were developed by the Board working in cooperation with representatives of each audience. The Board recommends that organizations, agencies, groups, and individuals interested in environmental education use this portion of the plan as a guide for their work and planning over the next ten years.

Those interested in environmental education can use this portion of the plan as a guide for working with specific audiences.

Priority Audiences

The audiences, listed in priority order are:

PreK-12 Students
Higher Education Students
Government Officials and Boards
Consumers
Producers/Landowners
Regulated Community
Business Community
Outdoor Recreation Resource Users
Citizen and Youth Groups
Religious Groups

Priority audiences were identified by the Board using the following criteria. Audiences that:

- Have direct impact on the natural resources;
- Have impact on resource law and management;

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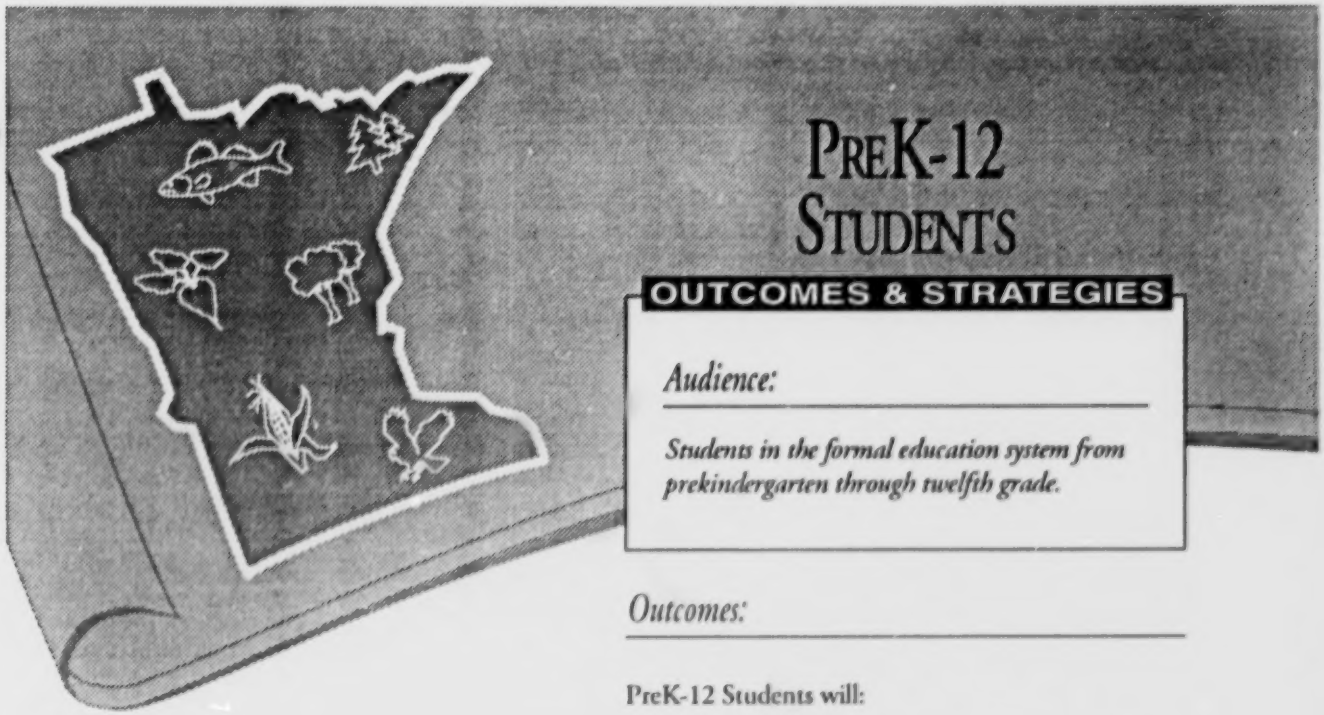
- Are in a position to model behavior to others;
- Are capable of changing behavior;
- Are caught up in situations that bring personal involvement in environmental issues to the fore.

For each of the priority audiences, needs have been identified and strategies and implementation actions have been formulated. The outcomes and strategies are listed in priority order for each audience.

Environmental educators and those interested in environmental education are encouraged to work in partnership to help achieve Minnesota's goals for environmental education. Opportunities for such partnerships have been identified for each audience and are suggested in each implementation action.



PreK-12 Students

OUTCOMES & STRATEGIES

Audience:

Students in the formal education system from prekindergarten through twelfth grade.

Outcomes:

PreK-12 Students will:

1. **Understand scientific principles that define ecological systems.**

   Sample Indicator: Students can define concepts central to ecology.

2. **Develop critical thinking skills to be able to understand opposing views in issues that effect the environment.**

   Sample Indicator: Students will be able to debate opposing view points on environmental issues.

3. **Develop personal appreciation, sensitivity, and stewardship for the environment.**

   Sample Indicator: Increased number of students involved in positive actions with the environment.

4. **Be aware of the effects of personal decisions and actions on the local and global environment.**

   Sample Indicator: Students can describe some local and global environmental, social, and economic implications of an issue.

5. **Be wise consumers.**

   Sample Indicator: When describing how they make decisions about purchases, students include environmental considerations.

State Goals for Environmental Education

To understand ecological systems.

To understand the cause and effect relationship between human attitudes and behavior and the environment.

To be able to analyze, develop, and use problem-solving skills to understand the decision-making process of individuals, institutions, and nations regarding environmental issues.

To be able to evaluate alternative responses to environmental issues before deciding on alternative courses of action.

To understand the potential complementary nature of multiple uses of the environment.

To provide experiences to assist citizens to increase their sensitivity and stewardship for the environment.

To provide information citizens need to make informed decisions about actions to take on environmental issues.

Related Background Information:

- Minnesota State Board of Education Rules (1986) lists environmental education as required curriculum for kindergarten through the last elementary grade in each elementary school.
- The 1990 Environmental Education Act requires the Minnesota Department of Education to assist in establishing environmental education in all public elementary and secondary schools.
- There are 766,784 PreK-12 students in Minnesota public school and 80,653 students in private schools. There are 49,045 teachers in public schools and 5,759 teachers in private schools .
- Prekindergarten, kindergarten and elementary average daily membership is expected to grow by about 4500 students through 1994. It will then decline each year through the year 2000, with a decrease in average daily membership of 25,000 by the year 2000. (MDE, 1992).
- Because of enrollment changes, school districts will hire fewer than 100 new elementary teachers each year through 1994-95. After that, around 240 elementary positions will probably be eliminated each year through the year 2000. (MDE, 1992).
- Secondary school average membership is projected to increase by some 84,500 students from 1991-92 through the year 2000. (MDE, 1992).
- During the next 10 years there is expected to be an annual increase of around 490 secondary teachers because of enrollment increases. (MDE, 1992)
- About 3000 to 3500 new PreK-12 teaching jobs are created annually through turnover. (MDE, 1992).
- In March 1993, the State Board of Education approved graduation content outcomes that include an outcome assigned to environmental education. (Content outcomes describe the knowledge and processes that give the graduate an in depth understanding of various contexts.)
  - The Minnesota graduate understands stewardship of the environment.
- Competence in teaching environmental education is not included as a requirement for teacher licensure or relicensure.
- In a 1991 survey of Minnesota teachers, when asked what kinds of training they have had in environmental education sixty-nine percent indicated they received their training from personal experience; forty-five percent from workshops/seminars; thirty-two percent from inservice; twenty-two percent from continuing education classes; and fourteen percent from pre-service. (Minnesota Center For Survey Research [MCSR], 1991).
- Minnesota teachers surveyed in 1991 indicated that the media (newspapers, TV news, TV news magazine shows) are major sources of information on environmental education resources and services. After the media, environmental organizations, state and local governments, and magazines were identified as major sources of such information. (MCSR, 1991).
- Sixty-eight percent of Minnesota teachers surveyed said they had conducted environmental activities with students in their classes during the 1990-1991 school year. However, only thirty-three percent of Minnesota teachers felt they definitely knew enough about environmental education to incorporate it into their own teaching. (MCSR, 1991).
- Among Minnesota teachers surveyed, eighty-one percent of the physical/biological science teachers conducted environmental education in the 1990-1991 school year, but only sixty percent indicated they definitely knew enough about environmental education to incorporate it into their teaching. (MCSR, 1991).
- Among Minnesota teachers surveyed, eighty-two percent of the teachers who teach all subjects (primarily elementary teachers) conducted environmental education in the 1990-1991 school year, but only thirty-two percent of those teachers indicated they definitely knew enough to incorporate environmental education into their teaching. (MCSR, 1991).
- Minnesota teachers surveyed indicated that in order to conduct environmental education their greatest needs were for funding and support from administration (fifty-one percent), naturalists/speakers (forty-nine percent), training on environmental issues (forty-seven percent), and environmental learning stations/kits (forty-one percent). (MCSR, 1991).
- The Department of Education has identified an environmental education teacher contact in each public and private PreK-12 school in Minnesota. In a 1992 survey, these teachers indicated that the following factors were equally useful in assisting teachers in providing environmental education:
  - teacher training
  - off-school-site experiences
  - school environmental education site within walking distance
  - resources (materials, audio/visual aids, etc.). (Department of Education, 1992)
- In the same survey, about one-third of the teachers indicated they had a site for environmental education

within walking distance and just under half indicated that they had been to a residential environmental education center. (Department of Education, 1992).

- When Minnesota teachers were asked what they needed to take students off school grounds for environmental education, they indicated a need for money for transportation (seventy-six percent), money for fees (seventy-one percent), information about places to go (fifty-seven percent), and time for planning (forty-five percent). (MCSR, 1991).
- Minnesota teachers and administrators surveyed indicated that it was very important to include environmental concepts in science and social studies. To a lesser degree, they supported including environmental concepts in reading, English, and art. (MCSR, 1991).
- Twenty-three percent of Minnesota school administrators surveyed indicated that their districts had a written plan for environmental education and five percent indicated they had a separate budget line for environmental education activities. (MCSR, 1991).
- Minnesota school administrators surveyed indicated that money for transportation (eighty-one percent), money for fees (seventy-four percent), and information about places to go (sixty-two percent) would allow teachers in their school districts to take students off school grounds for environmental education experiences more often. (MCSR, 1991).
- Minnesota school administrators surveyed indicated that in the 1990-1991 school year financial support was provided for environmental education in the areas of off-site trips (fifty-two percent), teacher training (thirty-five percent), curriculum purchase (thirty percent), program development (twenty-eight percent), and equipment (fourteen percent). (MCSR, 1991).
- Minnesota school administrators indicated that teachers in their district needed funding and support (seventy-three percent) and training in environmental issues (sixty-one percent) to do environmental education activities with students. (MCSR, 1991).

Needs:

a. School administrators and boards need to support environmental education.

b. Teachers need to be prepared to teach environmental education content and concepts using experiential teaching methodology.

c. Students need access to a variety of learning sites beyond the classroom.

d. Teachers need access to current and accurate materials, resources, and resource people.

Partnership Opportunities:

local schools
Department of Education
Educational Cooperative Service Units, education districts, and organizations serving local schools
higher education institutions
environmental education centers
parent, teacher, and student associations
state and federal agencies
local governments
volunteer groups (outdoor recreation groups, citizen and youth groups environmental groups, producer/land owner groups, hunting and fishing clubs)
regional agencies (Soil and Water Conservation Districts [SWCD], Board of Water and Soil Resources [BWSR])
business and regulated communities
Community Education
School Nature Area Project
public television stations

Strategies:

I. Provide Incentives

Provide incentives for PreK-12 school administrators and school board members to implement programs and activities that achieve the goals of the 1990 Environmental Education Act.

Implementation Actions:

- Adopt proposed comprehensive environmental education outcomes required for high school graduation.

  Who: Department of Education, State Board of Education, Minnesota Legislature.

- Develop clear measurable goals and testable outcomes for PreK-12 environmental education.

  Who: Department of Education, local school districts.

- Promote and monitor school district efforts to achieve the goals and requirements of environmental education.

  Who: Department of Education.

- **Participate in annual conferences of school board members, superintendents, and principals.**

  Who: Office of Environmental Education, Department of Education.

- **Participate in regional and local environmental education conferences and networks.**

  Who: Office of Environmental Education, Department of Education.

- **Provide "Environmental Education Act Implementation Made Easy" materials to district and school administrators.**

  Who: Office of Environmental Education, Department of Education.

- **Recognize exemplary ways that school districts have used the inclusion of environmental education in the PER cycle review process to assure integration of environmental education into the curricular programs.**

  Who: Department of Education, Office of Environmental Education.

II. Provide Programs

Provide education programs in environmental education for current PreK-12 teachers.

Implementation Actions:

Inservice programs should:

- **Prepare teachers to integrate environmental education into their teaching.**

  Provide training to early childhood; elementary; and secondary science, social studies, and agriculture teachers in all Minnesota school districts in the use of the environmental education model curriculum integration process developed by the Department of Education.

  Who: Higher education institutions, Department of Education, environmental education centers, Community Education.

- **Provide in-depth training on environmental concepts, issues, and environmental education methods.**

  Identify and adapt model environmental education programs for ongoing teacher education.

  Who: Department of Education, higher education institutions, state agencies, environmental education centers.

- **Provide opportunities for teachers to be inspired about environmental education and introduced to current information and methods.**

  Provide training to PreK-12 teachers using national programs such as Project Learning Tree, Project WILD and Aquatic WILD.

  Who: Community Education, Department of Natural Resources, Department of Education, environmental education centers, and higher education institutions.

- **Encourage state environmental agencies to adopt or adapt materials on environmental issues within their purview, and disseminate these materials to teachers using the model currently employed by the Department of Natural Resources for the distribution of Project WILD and Project Learning Tree.**

  Who: Office of Environmental Education, State agencies.

- **Provide inservice training through workshops on how to use video and other technologies to provide environmental education.**

  Who: Local schools, media, higher education institutions.

Provide access to a variety of out-of-classroom environmental educational experiences.

Implementation Actions:

- **Encourage schools to provide out-of-classroom environment educational experiences at each grade level PreK-12.**

  Who: Department of Education, Office of Environmental Education, environmental education centers, regional and local environmental agencies, environmental organizations.

- **Encourage all school districts to adopt a three-tier, out-of-classroom environmental education program using school/neighborhood, community, and statewide sites.**

  Who: Department of Education, Department of Natural Resources, environmental education centers, School Nature Area Project.

- **Implement information and education programs for parents and school administrators outlining the academic value of out-of-classroom environmental education programs.**

  Who: Department of Education, environmental education centers.

- **Develop adequate programs and facilities to provide PreK-12 students with access to out-of-classroom environmental education experiences.**

  Provide day-use programs within fifty miles of each school and in populated areas, at least one for every 100,000 individuals.

  - Since there is a state park within fifty miles of all Minnesota citizens, consideration should be given for using these parks as cost-efficient opportunities for providing out-of-classroom day-use programs for environmental education. Curriculum should be adapted for state parks that allows teachers to conduct their own off-school-site environmental education activities at the parks.
  - Local units of governments should encourage and contribute financially to the development of an adequate number of day-use centers to serve their population.

  Establish residential environmental education centers in specific areas of the state where they do not currently exist in order to provide access for schools and education on all of Minnesota's biomes, i.e., northwest, southwest, southeast and urban, prairie, and agricultural parts of the state.

  Once residential environmental education centers have been initiated in unserved parts of the state and as demand grows, increase the capacity at existing residential environmental education centers in order to assure that requests for such an experience can be accommodated at least once during a student's K-12 schooling.

  Who: Environmental education centers, Minnesota Legislature, local governments, public and private non-profit agencies, camps.

- **Develop and implement a curriculum adaptation and planning process that ties out-of classroom studies more closely to schools' environmental education goals.**

  Who: Department of Education, environmental education centers, school districts, other environmental education deliverers.

III. Provide Access to Information

Develop and improve access to information and resources that will improve the ability of PreK-12 teachers to provide environmental education to students.

Implementation Action:

- **Develop, disseminate, and continually update an annotated, regionally-referenced guide to off-school-site environmental education opportunities.**

  Who: Environmental education centers, Office of Environmental Education.

- **Create a central clearinghouse that can provide statewide access to information about resources.**

  Who: Minnesota Legislature, Office of Environmental Education

- **Identify and implement a network of regional resource centers.**

  Who: Office of Environmental Education

- **Establish an environmental education team in each district composed of school board members, teachers, media specialists, and community representatives.**

  Who: School districts

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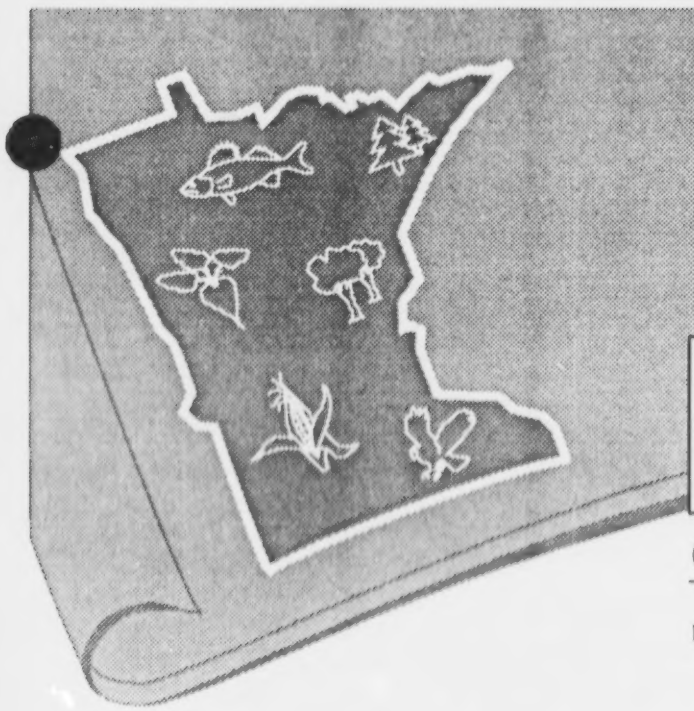

Higher Education Students

OUTCOMES & STRATEGIES

Audience:

Students in institutions of higher education.

Outcomes:

1. **Students completing teacher education programs will demonstrate an understanding of ecological principles.**

   Sample Indicator: PreK-12 teachers know how to use ecological principles in their teaching.

2. **Students completing teacher education programs will demonstrate the ability to incorporate environmental education content and activities into curriculum across the disciplines.**

   Sample Indicator: PreK-12 teachers can plan and teach environmental education units that are interdisciplinary, accurate in their information, and integrated into lessons.

3. **Students in undergraduate degree programs will be able to articulate ecological principles and analyze environmental issues from the point of view of their majors.**

   Sample Indicator: Students will be able to identify environmental concerns that help define positions on an environmental issues.

4. **In their chosen career fields, students will have the knowledge and skills necessary to minimize actions harmful to the environment.**

   Sample Indicator: Increase number of work sites implementing sound environmental practices.

5. **Students will experience higher education institutions as models for sound environmental behaviors.**

   Sample Indicator: An increased number of higher education institutions will do internal audits of their environmental practices and act on the audit findings.

State Goals for Environmental Education

To understand ecological systems.

To understand the cause and effect relationship between human attitudes and behavior and the environment.

To be able to analyze, develop, and use problem-solving skills to understand the decision-making process of individuals, institutions, and nations regarding environmental issues.

To be able to evaluate alternative responses to environmental issues before deciding on alternative courses of action.

To understand the potential complementary nature of multiple uses of the environment.

To provide experiences to assist citizens to increase their sensitivity and stewardship for the environment.

To provide information citizens need to make informed decisions about actions to take on environmental issues.

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Sample Indicator: An increased number of higher education institutions will adopt environmentally sound practices.

Related Background Information:

- A major priority for environmental education is the challenge of teaching about the physical aspects of the environment with social, economic, and political contexts. (Trudgill, 1991).
- In 1991, twenty-two presidents and vice chancellors of universities from all over the world met in Tallories, France and concluded that universities have a major role to play . . education, research, policy formation, and information exchange to address environmental problems. They outlined the actions necessary to play this role. (Tallories Declaration, 1991. See Appendix).
- "The Strategic Plan for Establishing the Environmental Protection Agency (EPA) Environmental Education Program" (1991) identifies the following objectives related to college, university, and school of education students:
  - Improve teacher training by adding courses in environmental education to schools of education curriculum.
  - Increase supply of graduates choosing environmental careers.
  - Continue to build literacy of students by incorporating environmental education in liberal arts education.
- Effective environmental educators should exhibit a basic understanding of competencies in professional education, ecology, conceptual environmental awareness, environmental issues investigation and evaluation, and environmental action skills. (Wilke, 1987).
- 273,960 students attend public and private institutions of higher education in Minnesota. Higher education institutions train workers and leaders in all segments of society. Foundations laid in the prescribed curriculum provide students an opportunity to explore issues over a period of time and allow for integration of specific training into various professions.
- The University of Minnesota, Twin Cities has identified the environment as one of four designated themes in the liberal education graduation requirements.
- Currently, Minnesota State Board of Education Rules require elementary teachers to teach environmental education in elementary schools. The 1990 Environmental Education Act also requires the Department of Education to assist in establishing environmental education in all public elementary and secondary schools. While the state requires and encourages that environmental education be taught, teachers are not required to be trained to teach the subject.
  - 3799 individuals completed a Minnesota teacher education program in 1991. (MDE, 1992).
  - Eighty-five percent of 1991-1992 first year teachers in Minnesota were graduates from Minnesota colleges and universities. (MDE, 1992).
- Minnesota teachers are attempting to teach environmental education. Sixty-eight percent of the teachers surveyed indicated they had conducted environmental education activities in their classroom during the 1990-1991 school year . But these teachers do not feel adequately prepared. (MCSR, 1991).

  Only thirty-three percent of the teachers surveyed indicated they definitely knew enough to incorporate environmental education into their teaching.
- A survey of Minnesota teachers shows that pre-service training is more effective than inservice training in preparing teachers to teach environmental education. Sixty-four percent of the teachers who had pre-service training and forty-five percent of those with inservice training indicated they definitely knew enough to incorporate environment education into their teaching. (MCSR, 1991).
- Current teachers have had more opportunities for inservice training than pre-service training in environmental education. Of Minnesota teachers surveyed who conducted environmental education activities in the 1990-1991 school year, sixteen percent indicated they had pre-service training and forty-two percent indicated they had inservice training in environmental education. (MCSR, 1991).

Needs:

a. Future teachers need the knowledge and skills to teach environmental education.

b. All students should be exposed to environmental education consistent with the state environmental education goals and related to their field of study.

c. All students should experience higher education institutions as environmental role models.

Partnership Opportunities:

higher education institutions
Board of Teaching
Department of Education
environmental education centers
Minnesota science teachers associations and other similar discipline groups
local school districts
business community
state agencies
local governments

Strategies:

I. Provide Education Programs

Provide environmental education training for all students preparing to teach or currently teaching in the PreK-12 system.

Implementation Actions:

- Include environmental education in pre-service training programs for all PreK-12 teachers.

  Who: Higher education institutions.

- Determine criteria for environmental education pre-service teacher training that is consistent with the state's environmental education goals.

  Who: Board of Teaching, higher education institutions, Minnesota Department of Education.

- Work with higher education institutions to develop their active support for the inclusion of environmental education as a requirement for PreK-12 licensure.

  Who: Department of Education, Office of Environmental Education.

- Provide a mechanism for higher education institutions to develop and evaluate their environmental education pre-service programs.

  Who: Higher education institutions.

- Require the Department of Education and local school districts to define inservice standards for environmental education.

  Who: Minnesota Legislature.

- Coordinate with environmental educators at government agencies, local PreK-12 schools, and environmental education centers in the design and delivery of inservice courses that meet identified standards.

  Who: Higher education institutions.

- Accept an environmental education component toward renewal of teacher licensure and lane changes in any subject area.

  Who: Department of Education, local PreK-12 schools.

Include an environmental education component in all higher education programs.

Implementation Actions:

- Define environmental education content and concepts to be included in all programs of study.

  Who: Higher education institutions.

- Design plans for the infusion of environmental education throughout the higher education curriculum.

  Who: Higher education institutions.

- Promote adoption of an environmental component to be included in all higher education undergraduate programs.

  Who: Office of Environmental Education, Environmental Education Advisory Board, higher education institutions.

- Encourage the development of plans at all higher education institutions for providing environmental education to all students.

  Who: Office of Environmental Education, Environmental Education Advisory Board, higher education institutions.

- Provide faculty of higher education institutions expanded opportunities for education in environmental issues, scientific and technical knowledge, and methods for integrating environmental education into courses and programs of study.

  Who: Higher education institutions, Minnesota Legislature.

- **Support the inclusion of environmental education courses for transfer credit among higher education institutions.**

  Who: Higher Education Coordinating Board, higher education institutions.

- **Provide students with training and involve students in research and intern programs that equip them to operate in regulated environments and to be environmental specialists for government and business.**

  Who: Higher education institutions.

- **Encourage the involvement of students and physical plant personnel in projects to implement environmental practices at higher education institutions.**

  Who: Higher education institutions.

- **Provide scientific and technical experts opportunities for training in instructional methods and skills.**

  Who: Higher education institutions.

II. Provide Incentives

Provide incentives that encourage higher education institutions to become leaders in environmental education.

Implementation Actions:

- **Require environmental education pre-service training as part of licensure for all PreK-12 teachers.**

  Who: Board of Teaching.

- **Require environmental education for re-certification in certain PreK-12 subjects (e.g. early childhood, elementary, science, social science, and agriculture).**

  Who: Department of Education, Minnesota Legislature.

- **Identify and provide institutions with examples of institutional models of sound environmental practices and environmental education programs.**

  Who: Office of Environmental Education, higher education institutions.

- **Encourage and assist institutions to conduct environmental audits of institutional practices.**

  Who: State environmental agencies.

- **Identify and work to remove state rules and regulations that serve as barriers to instituting sound environmental practices at higher education institutions.**

  Who: State agencies.

- **Develop an award system that recognizes the contributions of higher institutions and faculty to environmental education.**

  Who: Environmental Education Advisory Board.

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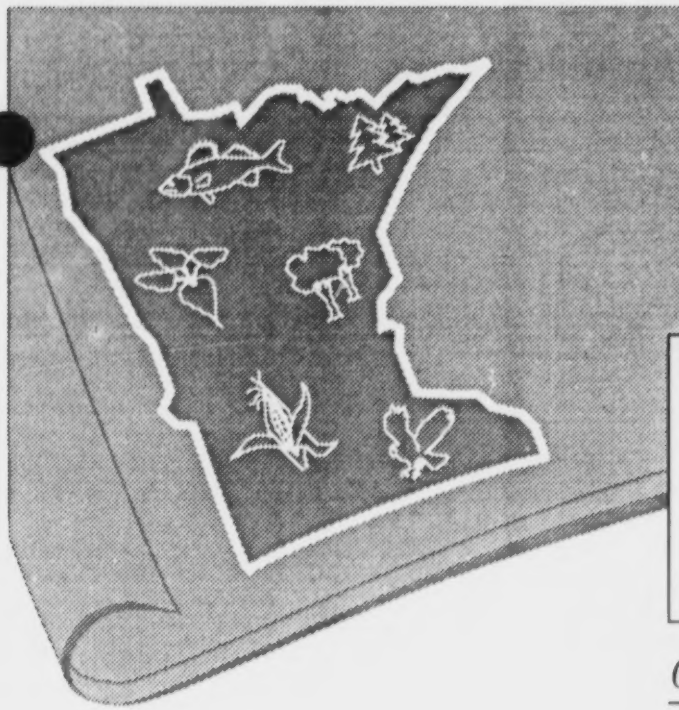

Government Officials and Boards

OUTCOMES & STRATEGIES

Audience:

Elected government officials at the state, county, city, township, and school district levels and appointed officials responsible for making major policy decisions.

Outcomes:

Government officials will:

1. **See themselves as resource managers and reflect environmental values in their decision making.**

   Sample Indicator: Development of and adherence to environmental policy statements.

2. **Understand the basic ecosystems with which they work.**

   Sample Indicator: Development of policies and implementation actions that reflect an understanding of ecosystems.

3. **Seek to balance economic concerns with environmental concerns.**

   Sample Indicator: Adoption of policies to support a goal of sustainable development.

4. **Recognize the impact of environmental factors on human health.**

   Sample Indicator: Priority is given to human health concerns when evaluating environmental factors in the decision-making process.

5. **Have a commitment to inform and educate constituents about the environment.**

   Sample Indicator: Increase of ongoing environmental education programs for the public.

State Goals for Environmental Education

To understand ecological systems.

To understand the cause and effect relationship between human attitudes and behavior and the environment.

To be able to analyze, develop, and use problem-solving skills to understand the decision-making process of individuals, institutions, and nations regarding environmental issues.

To be able to evaluate alternative responses to environmental issues before deciding on alternative courses of action.

To understand the potential complementary nature of multiple uses of the environment.

To provide experiences to assist citizens to increase their sensitivity and stewardship for the environment.

To provide information citizens need to make informed decisions about actions to take on environmental issues.

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Sample Indicator: Inclusion of educational programs in plans for responding to environmental issues.

6. Work with other government units to address environmental issues that transcend political boundaries.

   Sample Indicator: Increased governmental partnerships dealing with environmental issues.

Related Background Information:

- Government officials are policy leaders whose decisions and actions significantly impact the environment.
- In addition to state government, Minnesota has 87 county governments, 411 school districts, 856 city governments, 1,801 township governments, 91 soil and water conservation districts, and 41 watershed districts.
- A survey of Americans' beliefs about the environment shows that citizens assign responsibility for solving environmental problems primarily to government. (World Wildlife Fund, 1992).
- Local government managers and staff must not only develop their own skills, they must also work to sensitize their local government officials and boards to the importance of government anticipating and planning for environmental problems rather than just reacting to these problems.
- The Government Training Service (GTS) provides training to members of local government associations. GTS's mission is "to meet the changing management and leadership need of policy makers, staff and appointed officials by providing innovative, comprehensive, practical training and consulting to publicly-funded organizations in Minnesota."
- An underlying policy of natural resource management is that it should be carried out by the lowest level of government that is appropriate.

Needs:

a. Government officials need a basic understanding of the environment and how it works.

b. Government officials need to understand the relationship between environmental issues and concerns and the responsibilities of their offices.

c. Government officials and those providing training to these officials need current, accurate, readily accessible environmental information.

d. Government officials need incentives to adopt and promote sound environmental behaviors and policies.

Partnership Opportunities:

local government agencies
Association of Minnesota Counties
League of Minnesota Cities
Minnesota Association of Townships
Minnesota School Boards Association
Minnesota Association of Soil and Water Conservation Districts
Minnesota Association of Watershed Districts
Government Training Service
state agencies:
- Department of Natural Resources
- Pollution Control Agency
- Board of Water and Soil Resources
- Office of Waste Management
- Department of Agriculture
- Department of Transportation
- Department of Trade and Economic Development
- Department of Health
- Department of Public Service
- Department of Education

regional government agencies:
- Regional Development Commissions
- Metropolitan Council
- Metropolitan Waste Control Commission
- Regional Transit Board
- Watershed Management Organizations

Strategies:

I. Provide Incentives

Provide incentives for government officials to model environmentally responsible behaviors.

Implementation Actions:

- Provide financial incentives for local governments to adopt environmentally responsible behaviors.

  Who: Minnesota Legislature.

- Encourage government units to develop environmental plans and policies for the operation of their units.

  Who: Office of Environmental Education, state agencies, local government associations.

- **Establish recognition programs for governments and individuals that develop exemplary or model environmentally responsible programs and activities, including environmental education programs for governmental officials.**

  Who: Environmental Education Advisory Board, local government associations.

- **Form partnerships to address local environmental issues.**

  Who: Local governments, business community, local schools, state environmental agencies, environmental organizations.

- **Encourage creative, simple methods for constructive public participation in local environmental decisions.**

  Who: State environmental agencies, local government associations, local governments, environmental organizations.

II. Provide Programs

Provide government officials an overview of the relationship of environmental issues to the responsibilities of their offices.

Implementation Actions:

- **Encourage local government associations to adopt environmental education as a priority for their members and to provide opportunities for this education at their annual conferences and other training programs.**

  Who: Environmental Education Advisory Board, Office of Environmental Education, local government associations, Government Training Service.

- **Identify priority environmental issues for the state.**

  Who: Minnesota Legislature, Environmental Quality Board.

- **Develop ongoing training programs for elected and appointed government officials to achieve the state goals for environmental education and the outcomes for government officials.**

  Who: Local government associations, Government Training Service, state environmental agencies, local governments, higher education institutions, environmental education centers, environmental organizations.

- **Use existing mechanisms, such as comprehensive plans and county water plans, as vehicles to deliver environmental education to government officials.**

  Who: Local governments.

- **Establish citizen advisory groups to work with government officials on the development and implementation of environmental education programs.**

  Who: Local governments.

- **Identify and provide local governments with examples of environmentally responsible actions.**

  Who: State environmental agencies, local government associations, environmental organizations, Government Training Service.

- **Provide opportunities for training in instructional methods for government staff.**

  Who: Higher education institutions, state and local government agencies, Government Training Service.

III. Provide Access To Information:

Provide government officials and staff increased access to information necessary to develop an understanding of environmental issues.

Implementation Actions:

- **Identify environmental information needed by government officials.**

  Who: Local government associations, state agencies, elected and appointed government officials.

- **Develop and disseminate easy-to-use educational information on state priority issues that can be adapted for local use.**

  Who: Office of Environmental Education, state agencies.

- **Identify an environmental education coordinator in governmental units to serve as liaison to the Office of Environment Education.**

  Who: State, regional, and local governments; Office of Environmental Education.

- **Create a central clearinghouse for environmental education.**

  Who: Minnesota Legislature, Office of Environmental Education.

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- **Identify resource information locations serving each county where state, federal, and other environmental information can be accessed.**

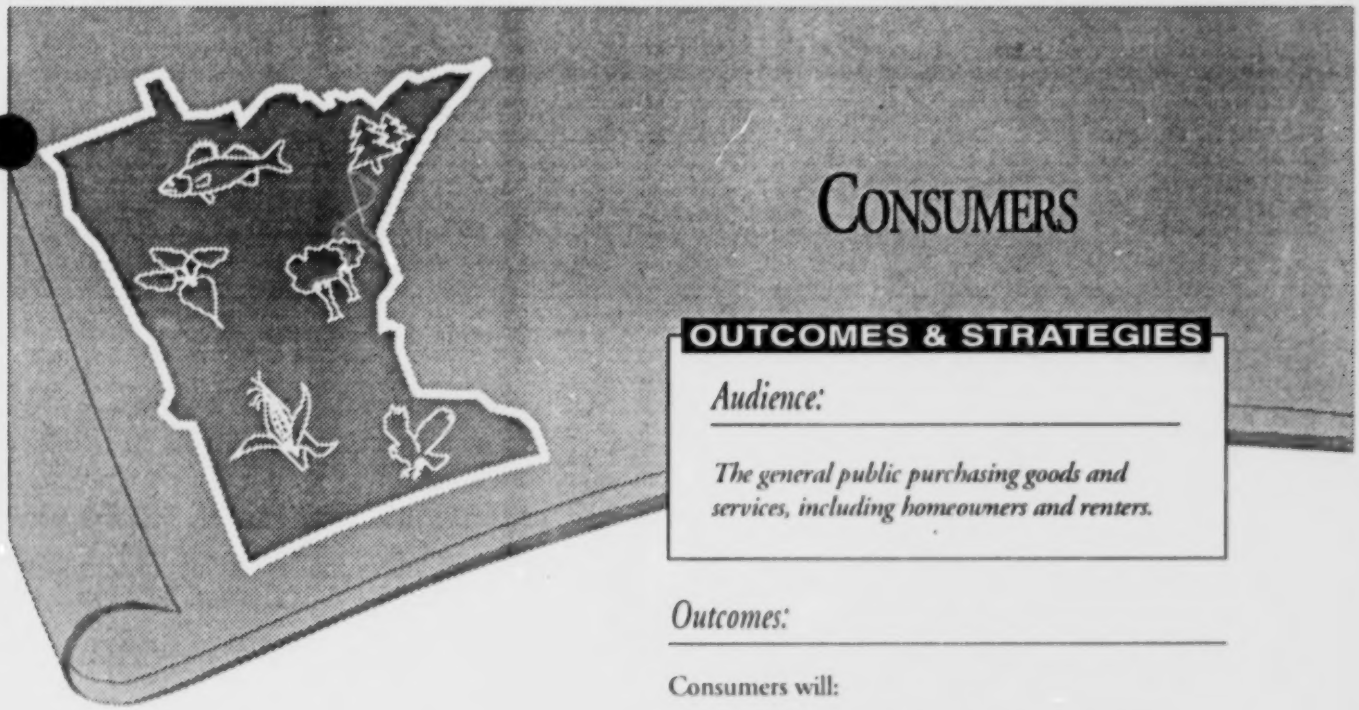
  Who: County governments.

- **Develop materials that translate technical information into lay terminology tailored to meet the needs of government officials.**

  Who: State environmental agencies, environmental organizations.

- **Use current technologies and telecommunication to help ensure efficient and timely access to information to raise awareness of state and local environmental issues.**

  Who: State, regional, and local governments.



CONSUMERS

OUTCOMES & STRATEGIES

Audience:

The general public purchasing goods and services, including homeowners and renters.

Outcomes:

Consumers will:

1. **Adopt a sustainable lifestyle that reflects an understanding that individual actions have social, economic, and environmental implications.**

   Sample Indicator: Increased use of products, transportation modes, and energy sources developed using environmentally sustainable practices.

   Sample Indicator: Decrease in per capita energy consumption.

2. **Understand and implement the waste management hierarchy of reduce, reuse, recycle.**

   Sample Indicator: Increased purchasing of products with less packaging.

   Sample Indicator: Reduction in waste collected.

   Sample Indicator: Increase in recycling.

3. **Reduce the use of and increase the appropriate disposal of household hazardous waste.**

   Sample Indicator: Increased awareness of alternatives to chemicals.

   Sample Indicator: Reduction of toxic chemical use.

4. **Consider the environmental consequences of housing choices.**

   Sample Indicator: Increased renovation of existing buildings.

   Sample Indicator: Growth in the sales of energy efficient housing products.

State Goals for Environmental Education

To understand ecological systems.

To understand the cause and effect relationship between human attitudes and behavior and the environment.

To be able to analyze, develop, and use problem-solving skills to understand the decision-making process of individuals, institutions, and nations regarding environmental issues.

To be able to evaluate alternative responses to environmental issues before deciding on alternative courses of action.

To understand the potential complementary nature of multiple uses of the environment.

To provide experiences to assist citizens to increase their sensitivity and stewardship for the environment.

To provide information citizens need to make informed decisions about actions to take on environmental issues.

Related Background Information:

- The media in general and television in particular, are perceived by the public, both school children and adults, to be their major sources of environmental information. (Wiesenmayer, 1984).
- Newspapers, TV news, and TV news magazines were identified as major sources of information on environmental problems and issues by Minnesota residents. (MCSR, 1991).
- Research shows that the most effective way to encourage ecomanagement behaviors appears to be to give those behaviors a value. Thus, the incentive system seems to be more effective in enticing ecomanagement behavior than more traditional methods such as appeals to citizenship. (Hines, 1984).
- Negative reinforcement (i.e. fines) appear to be quite effective in bringing about individual ecomanagement behavior in situations where strict monitoring and enforcement occur. (Hines, 1984).
- The more information people have concerning an environmental issue, the more likely they are to manifest a pro-environmental position. (Wiesenmayer, 1984).
- A large number of people do not believe they can do much to help solve environmental problems. (Wiesenmayer, 1984).
- In terms of energy, it appears as though short-term consumption by households can be affected by frequent feedback on household consumption levels. (Hines, 1984).
- Support for environmental problem resolution tends to wane as required personal sacrifices increase. (Hines, 1984).
- Sixty-three percent of the young people say they lobby their parents about recycling and over fifty-two percent encourage their parents to buy environmentally responsible products. (World Wildlife Fund, 1992).
- Eighteen percent of Minnesota residents surveyed indicated that children were a major source of environmental information, and twenty nine percent indicated that children were a minor source of such information. (MCSR, 1991).
- Twelve percent of Minnesota residents surveyed indicated that businesses in their community were a major source of environmental information, and thirty-three percent indicated that businesses in their community were a minor source of such information. (MCSR, 1991).

Needs:

Consumers need:

a. Opportunities to gain a basic understanding of the environmental consequences of their purchasing and consumption practices.

b. Access to information about potential environmental effects of their choices of actions, products, and services.

c. Incentives for making environmentally sound decisions when purchasing products and services.

Partnership Opportunities:

state agencies:
- Office of Waste Management
- Department of Public Service
- Attorney General's Office
- Department of Education
- Department of Agriculture
- Pollution Control Agency
- Environmental Quality Board
- Department of Health
- Department of Trade and Economic Development

media
businesses
utilities
waste haulers
local schools
community education programs
higher education institutions
environmental education centers
Minnesota Extension Service-University of Minnesota
environmental organizations
religious groups

Strategies:

1. Develop Programs

Develop and deliver programs that will assist consumers to understand environmental issues and the impact of their lives and decisions on the environment.

Implementation Actions:

- Train those who have contact with consumers to be environmental educators about their products, services, and practices.

  Who: Business, state agencies.

- **Provide environmental education programs to consumers through local youth and civic groups, community education programs, religious organizations, adult basic education, and English as a Second Language classes.**

  Who: Environmental education centers, environmental groups, businesses, Community Education.

- **Promote a vision of sustainable development and problem prevention.**

  Who: Environmental Quality Board, state agencies, environmental organizations.

- **Provide programs that explain the true life-cycle cost of products, services, and practices.**

  Who: Office of Waste Management, businesses.

- **Encourage students to educate adults and other youth by promoting youth service activities that include environmental programs.**

  Who: Local schools, Community Education, youth service organizations, environmental organizations, higher education institutions.

- **Educate consumers about how to do research on products, services, and practices.**

  Who: State agencies, business community, environmental organizations, regional agencies.

- **Promote "green" practices and the use of transit options through programs located in shopping areas.**

  Who: Business community, state agencies, regional agencies, local governments, environmental organizations.

II. Provide Access to Information

Increase opportunities for consumers to have easy access to information regarding the environmental impacts of products, services, and practices.

Implementation Actions:

- **Promote the use of the media as a major deliverer of environmental information to the consumer.**

  Who: Media organizations, Minnesota Environmental Education Advisory Board, state agencies.

- **Use cultural celebrations and events such as "Earth Day" to provide environmental education information.**

  Who: Environmental organizations, religious groups, citizens and youth groups, state and local governments, Community Education, local schools, higher education institutions.

- **Identify base-line data consumers need to make environmentally sound purchasing decisions.**

  Who: State agencies, businesses, environmental organizations.

- **Provide environmental education information at the point of purchase, i.e., at malls, in bills, on shelves, and on products.**

  Who: Businesses and manufacturers, state and local governments, environmental organizations.

III. Provide Incentives

Provide incentives for producers to promote and consumers to purchase products and services which are least harmful to the environment.

Implementation Actions:

- **Build partnerships between business and government to promote environmentally sound products, services, and practices.**

  Who: Businesses, state agencies, regional and local governments.

- **Establish award programs to recognize activities that promote products, services, and practices that are least harmful to the environment.**

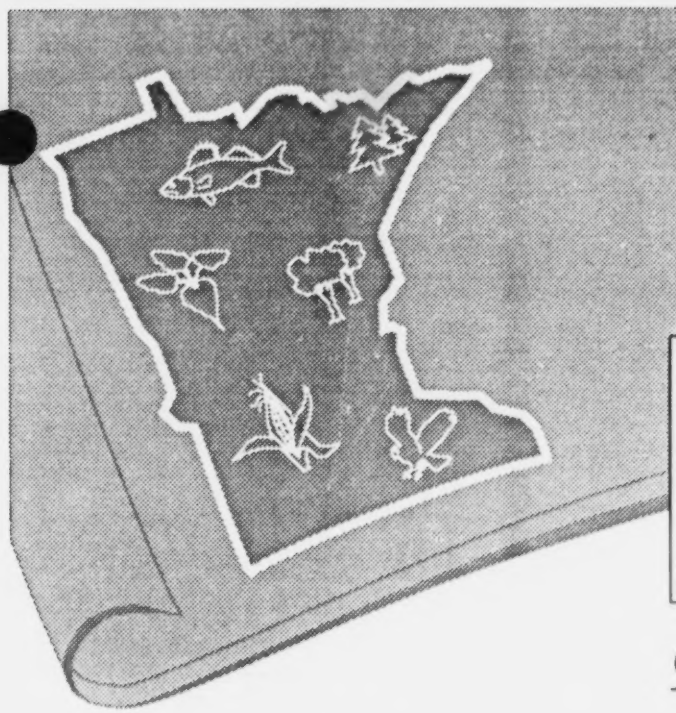
  Who: Environmental Education Advisory Board; Governor's Office; state, regional, and local governments; environmental organizations.

- **Require environmental information on regulated products.**

  Who: Minnesota Legislature, state regulatory agencies.

- **Develop guidelines and establish a "green labeling" program.**

  Who: Office of Waste Management, business community, Attorney Generals' Office.



PRODUCERS/ LANDOWNERS

OUTCOMES & STRATEGIES

Audience:

Those responsible for managing private or public land for the purpose of raising food, fiber, or forest products.

Outcomes:

Producers/Landowners will:

1. **Institute management practices that ensure the long term health of the ecosystem and maintain a continuous supply of forestry and agricultural products.**

   Sample Indicator: Reduction in soil erosion per acre of cropland.

   Sample Indicator: Forestry and agricultural lands are managed using Integrated Resource Management principles.

2. **Optimize production and harvest in an environmentally sustainable manner.**

   Sample Indicator: Increased adoption of Best Management Practices plans for preventing or reducing the amount of pollution.

3. **Understand the interrelationship as well as the multiple use of resources.**

   Sample Indicator: Identification of practices which benefit the management of two or more natural resources.

   Sample Indicator: Increased partnerships focusing on complementary use of production land resources.

4. **Participate in providing environmental information and education to their peers, consumers, students, the media, citizen and youth groups, and environmental groups.**

   Sample Indicator: Increased partnerships between producers/landowners and other deliverers of environmental education.

State Goals for Environmental Education

To understand ecological systems.

To understand the cause and effect relationship between human attitudes and behavior and the environment.

To be able to analyze, develop, and use problem-solving skills to understand the decision-making process of individuals, institutions, and nations regarding environmental issues.

To be able to evaluate alternative responses to environmental issues before deciding on alternative courses of action.

To understand the potential complementary nature of multiple uses of the environment.

To provide experiences to assist citizens to increase their sensitivity and stewardship for the environment.

To provide information citizens need to make informed decisions about actions to take on environmental issues.

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5. Understand environmental regulatory processes and the rationale for regulations and land management.

   Sample Indicator: Decrease in non-compliance with regulations.

6. Make decisions in forestry and agricultural product industries which demonstrate an understanding of the economic and image benefits to be gained from producing environmentally responsible products.

   Sample Indicator: Increase in companies promoting and implementing environmentally responsible actions and products.

Related Background Information:

Forestry

- Forests cover one-third of Minnesota's total acreage, with 14,800,000 million acres available for commercial timber production. Public forest lands account for 8,200,0000 million acres and an additional 740,000 acres are owned by forest industries. The balance, 5,860,000 million acres, is in the hands of 130,000 Non-Industrial Private Forests (NIPF) landowners. (Department of Natural Resources, 1992).
- NIPF landowners hold thirty-five percent of the states total forest area (also expressed as forty-one percent of the total commercial forest area). (Department of Natural Resources, 1992).
- Initiatives such as the Integrated Resource Management program of the Department of Natural Resources and the Stewardship Program at the Minnesota Extension Service-University of Minnesota are helping public and private landowners manage their land for biodiversity, soil erosion control, water quality protection, old forests, and aesthetics.
- Only twelve percent of the 130,000 NIPF landowners (holding twenty-one percent of Minnesota's non-industrial private commercial forests) were estimated to have ever sought professional forestry assistance. (Department of Natural Resources, 1992).
- Approximately twenty percent of the Forest Stewardship Fund of the Forest Stewardship Program, funded by federal, state, and local sources, is designated for use in supporting information and education projects for NIPF landowners and to increase public awareness of the need for forest resource management. (Department of Natural Resources, 1992).
- Public involvement in promoting forest stewardship on private forest lands through technical assistance and education would contribute to the diversity of Minnesota's economic base, the abundance and diversity of fish and wildlife species, and enhanced aesthetic value of woodland habitat. (Department of Natural Resources, 1992).
- Achieving a substainable supply of wood fiber from NIPF lands is important. The correlation between implementing management practices and achieving multiple resource goals is not often recognized by landowners. (Department of Natural Resources, 1992).
- Foresters need the benefit of additional education in order to implement the best management practices and standards that provide for forest water quality. (Department of Natural Resources, 1992).
- National standards and guidelines have been established for implementing the Forest Stewardship Program, which incorporates the American the Beautiful Rural Tree Program. The purpose of the program is to assist forest landowners to more actively manage their forest resources, to keep these lands in a productive and healthy condition, and to increase the economic and environmental benefits of these lands. (Department of Natural Resources, 1992).
- The forest products industry is second in manufacturing only to Minnesota's industrial machinery and equipment production industry.
- A 1991 Soil Conservation Service survey of employees indicated that the most effective way to create awareness of the importance of soil and water conservation and to train future farmers is by developing supplemental curriculum materials for students in general and for Future Farmer Association and Vo-ag students in particular, by encouraging student involvement through outdoor classrooms and hands-on activities, and by integrating conservation education into teacher training. (Soil Conservation Service, 1991).

Agriculture

- There were 88,000 farms and a total of 30,000,000 acres of land in farms as of June 1, 1991. Agriculture controls more than sixty percent of Minnesota's land. (Department of Agriculture, 1992)
- Food and agriculture production continues to be one of Minnesota's leading economic activities. Agriculture represents twenty-five percent of the state's gross product and twenty-three percent of the state's employment. About three percent of the state's labor force is engaged in producing the raw products for the food and fiber industry. Minnesota's top exporter is its food and agriculture industry. (Department of Agriculture, 1992)

- Minnesota fertilizer consumption totaled 2.1 million tons for the year ending June 30, 1991, down seven percent from the previous year. Fertilizer consumption represents all commercial fertilizer sold or shipped for farm and nonfarm use as fertilizer. (Department of Agriculture, 1992).
- The estimated annual wind erosion on cropland is 3.8 tons per acre, per year. This figure may be low. The estimated annual water erosion on cropland is 2.6 tons per acre, per year. (Soil Conservation Service, 1987).
- The primary reason for the loss of species diversity is the loss or degradation of habitat. In Minnesota this loss has been greatest in the prairies. This grassland habitat once covered nearly one-third of the state. More than ninety-nine percent of Minnesota's original 18 million acres of native prairie has vanished. Only one percent, or an estimated 150,000 acres, remain. What remains supports more than forty percent of the state's endangered species. (Department of Natural Resources, 1993).
- The Minnesota Department of Agriculture's Energy and Sustainable Agriculture Program (ESAP) was initiated in 1987. The purpose of the program is to demonstrate and promote alternative practices which are energy efficient, environmentally sound, profitable, and which enhance the self sufficiency of Minnesota farmers. The program conducts demonstrations on farms, at farm scale, and using the farmer's management system. (Department of Agriculture, 1992).
- The Land Stewardship Project has been involved in sustainable agriculture education including on-farm research and management strategies that integrate quality of life, profitability, and long-term health of the ecosystem.
- The University of Minnesota has formed the Minnesota Institute for Sustainable Agriculture to work with farmers and non-profit organizations to provide research and education on sustainable farming approaches.
- Agricultural education is currently offered in 191 high schools (grades 9-12), serving 12,300 students or six percent of students in Minnesota public schools.
- Higher education has approximately 2000 undergraduate students or one percent of Minnesota students enrolled in undergraduate agricultural programs across the state.

Needs:

Producers/Lanowners need:

a. A basic understanding of the ecosystem they manage, regional environmental goals, and global trends that effect Minnesota's environment.

b. A means to provide on-going exchange of information as well as peer support for producers/landowners making the transition to sustainable farming practices.

c. Increased public awareness of the interrelationship of the economic and environmental impacts of producers/landowners' management and practices.

Partnership Opportunities:

Forestry

Department of Natural Resources
Minnesota Forest Stewardship Committee
U.S. Forest Service
Soil Conservation Service
Agricultural Stabilization and Conservation Service
University of Minnesota
    Natural Resources Research Institute (NRRI)
    Minnesota Extension Service
    Minnesota Agricultural Experiment Stations
    School of Agriculture
    College of Natural Resources
local governments
Soil and Water Conservation Districts
consulting foresters
environmental organizations
forest products industry and associations
forest landowners
land-trust organizations
conservation organizations
higher education institutions
Indian tribal representatives
outdoor recreation user groups
environmental education centers

Agriculture

Department of Agriculture
sustainable agriculture organizations
Minnesota Extension Service-University of Minnesota
University of Minnesota-College of Agriculture
Board of Water and Soil Resources
Soil and Water Conservation Districts
farm organizations
commodity organizations
farm media
community education programs
Department of Public Service

Pollution Control Agency
higher education institutions
environmental education centers
business community

Strategies:

I. Provide Access To Information

Provide producers/landowners increased access to information on sound environmental practices and regulations.

Implementation Actions:

- **Create local support groups and maximize the ability of existing information networks to exchange ideas on current and future changes in management practices and technologies related to the environment.**

  Who: Producer/landowner organizations; Minnesota Extension Service-University of Minnesota; University of Minnesota-College of Agriculture; sustainable agriculture organizations; Department of Natural Resources; Department of Public Service; Pollution Control Agency; Department of Agriculture; federal, regional, and local governments; higher education institutions; media; environmental groups; environmental education centers.

- **Provide techniques and materials for educating agricultural and forestry employees on good environmental management practices.**

  Who: University of Minnesota-Extension Service, sustainable agriculture organizations, farm media, producers/landowners, government agencies, higher education institutions, businesses.

- **Use the environmental impact statement process as a teaching tool.**

  Who: State and local government agencies.

II. Provide Education Programs

Provide education programs to current and future producers/landowners about ecosystems, Best Management Practices, and regulations.

Implementation Actions:

- **Expand the opportunities for environmental education programs in such areas as regulations, species regeneration, ecosystems and wildlife habitat, aesthetics, soil erosion and water quality, Best Management Practices, and harvest practices.**

  Who: Higher education institutions, Department of Natural Resources, Department of Agriculture, production landowner organizations, businesses, environmental organizations, sustainable agriculture organizations, Minnesota Extension Service-University of Minnesota, University of Minnesota-College of Agriculture, federal and regional agencies, local schools.

Involve producers/landowners in the development and delivery of educational programs that raise public awareness of the complementary nature of multiple use of the environment.

Implementation Actions:

- **Develop and deliver PreK-12 educational programs designed to raise awareness of producer/landowner management practices.**

  Who: Local schools; production landowner organizations; Minnesota Extension Service-University of Minnesota, businesses; environmental education centers; Department of Natural Resources; Department of Education; Department of Agriculture; federal, regional, and local government agencies; environmental groups, sustainable agriculture organizations.

- **Provide opportunities to teachers to gain a basic understanding of issues facing producers/landowners.**

  Who: Producer/landowner organizations, Minnesota Extension Service-University of Minnesota, higher education institutions, Department of Natural Resources, Department of Agriculture, environmental education centers, sustainable agriculture organizations.

- **Provide training in education methodology for agriculture and natural resources staff responsible for educational outreach programs.**

  Who: Higher education institution, Department of Natural Resources, Departmental of Agriculture, Minnesota Extension Service-University of Minnesota, environmental education centers.

- **Provide increased opportunities for educational experiences at agricultural and forestry sites.**

  Who: Producers/landowners and organizations, Minnesota Extension Service-University of Minnesota, local school districts, community education programs, environmental education centers, government agencies, higher education institutions, environmental organizations, citizen and youth groups, cultural and ethnic organizations, businesses, sustainable agriculture organizations.

- **Provide opportunities for producers/landowners to educate each other through the use of demonstration sites.**

  Who: Producers/landowners, Minnesota Extension Service-University of Minnesota, businesses, state agencies, sustainable agriculture organizations.

- **Raise consumer awareness of the production practices associated with agriculture and forestry products.**

  Who: Producers/landowners and organizations, Minnesota Extension Service-University of Minnesota, Department of Natural Resources, Department of Agriculture, sustainable agriculture organizations, media, businesses, environmental groups.

III. Provide Incentives

Provide incentives for producers/landowners to manage resources in a environmentally responsible manner.

Implementation Actions:

- **Recognize and support efforts for trying new ideas and technologies.**

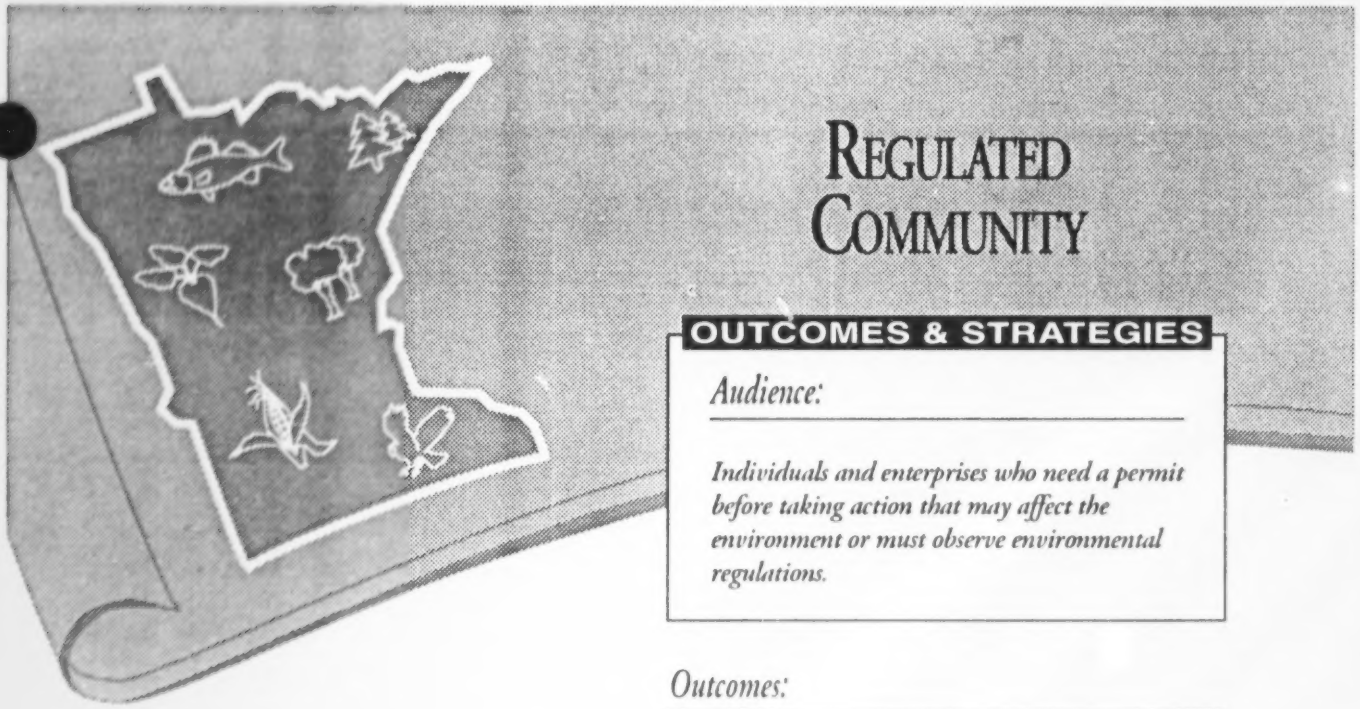
  Who: Minnesota Extension Service-University of Minnesota, producer/landowner organizations, Community Education, environmental groups, sustainable agriculture organizations.

- **Recognize producers/landowners who demonstrate sustainable practices**

  Who: Media, producer/landowner organizations, state agencies.

- **Provide information on incentive programs available to landowners to cost-share their stewardship activities.**

  Who: Department of Natural Resources, Department of Agriculture.



Regulated Community

OUTCOMES & STRATEGIES

Audience:

Individuals and enterprises who need a permit before taking action that may affect the environment or must observe environmental regulations.

Outcomes:

Individuals and enterprises that must comply with environmental regulations will:

1. **Know which actions and processes require permits.**

   Sample Indicator: Decrease in noncompliance with regulations.

   Sample Indicator: Increase in voluntary submittal of permit applications.

2. **Understand the rationale for regulations and be willing to comply.**

   Sample Indicator: The regulated parties can explain what might happen if a regulation had not been created.

3. **Know the requirements and procedures for complying with permits.**

   Sample Indicator: Decrease in noncompliance with regulations.

4. **Understand that regulations apply to all without privileged exemptions.**

   Sample indicator: Decrease on complaints about unequal application of regulations.

State Goals for Environmental Education

To understand ecological systems.

To understand the cause and effect relationship between human attitudes and behavior and the environment.

To be able to analyze, develop, and use problem-solving skills to understand the decision-making process of individuals, institutions, and nations regarding environmental issues.

To be able to evaluate alternative responses to environmental issues before deciding on alternative courses of action.

To understand the potential complementary nature of multiple uses of the environment.

To provide experiences to assist citizens to increase their sensitivity and stewardship for the environment.

To provide information citizens need to make informed decisions about actions to take on environmental issues.

Related Background Information:

- Units of government at all levels have the authority to establish regulations and issue permits to companies, organizations and individuals as means of reducing the potential for environmental degradation and managing environmental quality.
- Government regulating agencies help those seeking permits to understand the regulation and the permitting process. At the point of issuing a permit, the regulating agency has the opportunity to provide education about environmental issues related to the permit.
- Mineral commodities currently produced include iron ore and taconite, industrial minerals, and peat. Minnesota remains the leading iron ore producing state in the nation, responsible for approximately eighty percent of domestic production. (U.S. Department of Interior, 1992).
- Organizations with ties to the mining industry, such as the Minnesota Department of Natural Resources, United States Bureau of Mines, industry associations and Ironworld USA, provide materials and learning opportunities to educate the public about Minnesota's mining history and the importance of minerals in our everyday life. (Department of Natural Resources, 1993).
- Government regulations are believed by many to be the most effective and desirable way of solving environmental problems. However, this type of support may not be as great when the regulations will directly affect the population being polled. (Wiesenmayer, 1984).
- Negative reinforcement (i.e. fines) appears to be quite effective in bringing about individual ecomanagement behaviors in situations where strict monitoring and enforcement occur. (Hines, 1984).
- The most effective way to encourage ecomanagement behavior appears to be to give those behaviors a value. Thus, the incentive system seems to be more effective . . . than are more traditional methods such as appeals to citizenship. (Hines, 1984).

Needs:

The regulated community needs:

a. To understand the potential for degradation that makes regulation necessary.

b. Readily available information on the permitting process and alternatives to regulation.

Partnership Opportunities:

federal and state environmental regulatory agencies
local governments
business community
trade organizations
chambers of commerce
small business development centers
Government Training Service
local government associations
state and local bar associations, environmental sections
Minnesota Environmental Initiative
environmental education centers
Natural Resources Research Institute (NRRI)-University of Minnesota
higher education institutions
Minnesota Geological Survey-University of Minnesota

Strategies:

I. Provide Access To Information:

Provide the regulated community with increased access to information about the environmental rationale underlying the need for permits and regulations, the permitting process, and acceptable alternatives to regulations.

Implementation Actions:

- Develop and communicate a statewide environmental mission, including the identification of state priority issues.

  Who: Environmental Quality Board, Minnesota Legislature.

- Develop user-friendly guides to the regulatory process and alternatives to regulation.

  Who: State and local regulatory agencies.

- Incorporate easy-to-understand information on ecology and the environmental rationale underlying the need for regulation into the documents used in the regulatory process.

  Who: State and local regulatory agencies.

- Use a variety of locations and technologies to provide information on regulations and alternatives to state and local regulations.

  Who: State and local regulatory agencies, public libraries, business community, media.

II. Provide Education Programs

Increase and improve environmental education programs for the regulated community about the environmental rationale underlying the need for regulations and alternatives to regulation.

Increase and improve educational programs for students and citizens about the need for regulation.

Implementation Actions:

- **Improve communications about the purpose of regulations.**

  Who: State and local regulatory agencies, business community.

- **Include the role that regulations play in society in social science curricula.**

  Who: Department of Education, state regulatory agencies, local school districts, higher education institutions.

- **Make education programs more accessible, such as using existing conferences, seminars, and meetings.**

  Who: State and local regulatory agencies, business community.

- **Encourage businesses to develop and use pollution prevention and waste reduction techniques as alternatives to regulation.**

  Who: State and local regulatory and environmental agencies, business community, higher education institutions.

- **Provide training to increase the understanding of regulatory agency staff and ability to work with individuals and enterprises being regulated.**

  Who: State and local regulatory agencies, business community.

III. Provide Incentives:

Provide incentives that encourage individuals and enterprises to increase their understanding of the environmental rationale for regulations and to comply with required permits or identify alternatives to regulation.

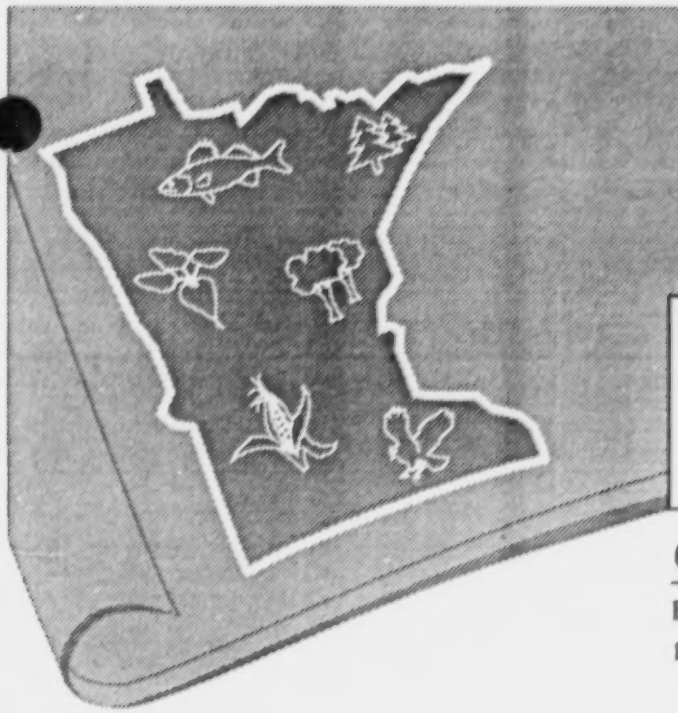
Implementation Actions:

- **Promote the benefits of complying with regulations as related to the environment, the economy, responsible community citizenship, and future liability.**

  Who: Local governments, state agencies, business community.

- **Recognize enterprises and individuals who provide exemplary models of their regulated activity or identify acceptable alternatives to regulation.**

  Who: State and local governments, business community.



Business Community

OUTCOMES & STRATEGIES

Audience:

Leaders and decision-makers in the business community.

Outcomes:

Business leaders and decision makers will:

1. **Team with regulators and environmentalists to develop environmentally benign solutions to technology-created problems.**

   Sample Indicator: Number of companies participating on such teams.

   Sample Indicator: Growth in percent of resources provided to research and development of environmentally benign processes and procedures.

2. **Increase their responsibility in developing clean-up technologies and practices related to hazardous materials.**

   Sample Indicator: Growth in job placement in professions requiring technical training in clean-up technology and practices.

   Sample Indicator: Growth in clean-up and prevention technologies and practices.

3. **Reduce gross energy use, optimize efficiency, and reflect the environmental costs in the costs of production.**

   Sample Indicator: Reduction in gross energy use per unit of measure.

   Sample Indicator: Establishment of market incentives that encourage alternative energy sources.

4. **Promote corporate responsibility relative to the environment.**

   Sample Indicator: Companies develop and publish environmental ethics statements.

   Sample Indicator: Implementation of resource conservation programs, such as developing alternative energy sources in facilities and processes.

State Goals for Environmental Education

To understand ecological systems.

To understand the cause and effect relationship between human attitudes and behavior and the environment.

To be able to analyze, develop, and use problem-solving skills to understand the decision-making process of individuals, institutions, and nations regarding environmental issues.

To be able to evaluate alternative responses to environmental issues before deciding on alternative courses of action.

To understand the potential complementary nature of multiple uses of the environment.

To provide experiences to assist citizens to increase their sensitivity and stewardship for the environment.

To provide information citizens need to make informed decisions about actions to take on environmental issues.

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Related Background Information:

- The 1992 Earth Summit in Rio de Janeiro focused on the concept of sustainable development. The Brundtland Report defines sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." (UNESCO-UNEP, 1992).
- The International Chamber of Commerce's *"Business Charter for Sustainable Development"* identifies "Principles for Environmental Management." (UNESCO-UNEP, 1992).
- Decisions by business leaders affect not only the resources used but also the consumer, the employee, and other businesses.
- Through increased collaboration with government and customers, individual businesses can continually model good environmental behaviors as well as educate their employees, suppliers, and consumers on specific practices.
- Despite the importance of environmental issues to corporations, schools of business and management, little attention is devoted to issues of business and environment. (National Wildlife Federation, 1982).
- In Minnesota and across the country, businesses are collaborating with schools to cooperatively develop environmental education programs.
- Businesses are major contributors to non-profit environmental programs and organizations.
- An increasing number of business organizations are being established to address environmental issues.

Needs:

Businesses need:

a. To examine and identify their role in environmental education.

b. To help implement the concept of sustainable development, to balance economic development and environmental protection.

c. To be encouraged to and be recognized for increased collaboration in supporting environmental education.

Partnership Opportunities:

Minnesota Chamber of Commerce
Minnesota Business Partnership
Minnesota Environmental Initiatives
individual chambers of commerce
labor, trade, and professional business organizations
environmental industries and consultants
PreK-12 schools
higher education institutions
media
environmental organizations
regional and local governments and agencies
environmental education centers
Minnesota Association for Environmental Education
state agencies:
- Department of Trade and Economic Development
- Office of Waste Management
- Department of Education
- Department of Public Service
- Pollution Control Agency
- Environmental Quality Board

Strategies:

I. Provide Incentives

Promote incentives for businesses to achieve identified environmental education outcomes by means of collaboration and partnerships.

Implementation Actions:

- Identify and promote cost-effective environmental services, products and practices that help businesses and consumers overcome economic barriers to acting more environmentally responsible.

  Who: Department of Public Service, Office of Waste Management, Department of Trade and Economic Development, Minnesota Environmental Initiatives, business community.

- Identify services, products, and processes that help to keep environmental regulation to a minimum.

  Who: Pollution Control Agency, Office of Waste Management, Minnesota Environmental Initiatives, business community.

- Establish or promote award programs for environmentally responsible actions and environmental education programs.

  Who: Minnesota Chamber of Commerce, Minnesota Environmental Education Advisory Board, business community.

- **Encourage business participation in establishing and addressing priority environmental issues for the state.**

  Who: Environmental Quality Board, business community, Minnesota Chamber of Commerce, Minnesota Environmental Initiatives.

- **Encourage business participation in the Minnesota Association for Environmental Education.**

  Who: Minnesota Association for Environmental Education, Minnesota Chamber of Commerce, Minnesota Environmental Initiatives, business community.

II. Provide Education Programs

Provide environmental education programs for business leaders, owners, and decision makers.

Provide environmental education programs for employees, consumers, and suppliers, as well as for the formal education systems.

Implementation Actions:

- **Include environmental educational programs in existing business seminars, conferences, and forums on topics related to the identified environmental education outcomes.**

  Who: Minnesota Chamber of Commerce, Minnesota Business Partnership, business associations.

- **Develop environmental education programs and materials collaboratively with business, government agencies, environmental organizations, formal education, and environmental education resource professionals.**

  Who: Department of Education, business community, state agencies, environmental organizations, environmental education centers, formal educators, higher education institutions.

- **Utilize technical and research professionals to provide environmental education.**

  Who: Higher Education institutions, businesses, state government.

- **Support environmental studies in undergraduate and graduate business and management education programs.**

  Who: Business community, higher education institutions, Minnesota Chamber of Commerce.

- **Support degree programs for environmental specialty careers.**

  Who: Board of Technical Colleges, business community, higher education institutions, Minnesota Chamber of Commerce.

- **Support opportunities for scientific and technical experts to have training in instructional methods and skills.**

  Who: Business community, higher education institutions.

III. Provide Access to Information

Improve access to information for businesses on environmental education resources and methodology.

Implementation Actions:

- **Provide businesses information on changes in consumer purchasing practices and the use of environmentally benign products.**

  Who: Office of Waste Management, Department of Public Service, Minnesota Chamber of Commerce, professional business organizations.

- **Publicize practices and policies related to the identified environmental education outcomes for the business community.**

  Who: Office of Environmental Education, Department of Public Service, Department of Trade and Economic Development, Office of Waste Management, Minnesota Chamber of Commerce.

- **Establish a clearinghouse of information on environmental education resources, research, and environmental affairs/education personnel within businesses.**

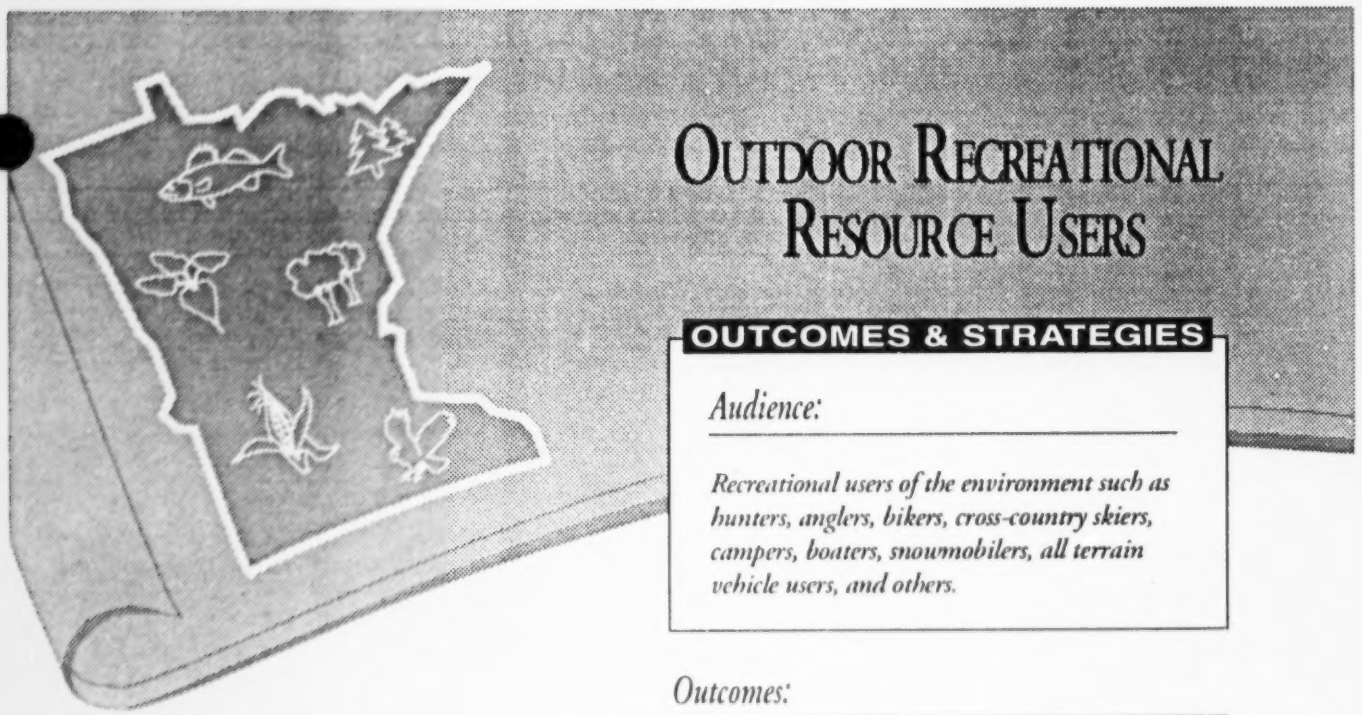
  Who: Minnesota Legislature, Office of Environmental Education, Minnesota Chamber of Commerce.

- **Publicize education methods and techniques and make environmental education resources available to employees, consumers, suppliers, and formal education students.**

  Who: Department of Education, Office of Environmental Education, Department of Trade and Economic Development, Office of Waste Management, Department of Public Service, business community, Minnesota Chamber of Commerce.

- **Promote awareness of the state's environmental education goals.**

  Who: Department of Education, Office of Environmental Education, Minnesota Chamber of Commerce.



Outdoor Recreational Resource Users

OUTCOMES & STRATEGIES

Audience:

Recreational users of the environment such as hunters, anglers, bikers, cross-country skiers, campers, boaters, snowmobilers, all terrain vehicle users, and others.

Outcomes:

Outdoor recreation resource users will:

1. **As individuals and groups, evaluate the impact of their activities on the environment.**

   Sample Indicator: User groups develop guidelines for sanctioned sound environmental behaviors.

2. **Demonstrate model environmental behaviors related to their activities.**

   Sample Indicator: Documented evidence of reduced negative and increased positive impacts of users' activities on the environment.

3. **Seek out information to make good environmental choices.**

   Sample Indicator: Increased requests for information about the impact of recreational use on the environment.

4. **Understand how multiple groups using the same resources affect the environment and other resource users.**

   Sample Indicator: Reduction in conflict among resource user groups.

   Sample Indicator: Preservation of the usability of the resources by all user groups.

5. **Play a role as an environmental educator for others relative to their outdoor recreational activities.**

State Goals for Environmental Education

To understand ecological systems.

To understand the cause and effect relationship between human attitudes and behavior and the environment.

To be able to analyze, develop, and use problem-solving skills to understand the decision-making process of individuals, institutions, and nations regarding environmental issues.

To be able to evaluate alternative responses to environmental issues before deciding on alternative courses of action.

To understand the potential complementary nature of multiple uses of the environment.

To provide experiences to assist citizens to increase their sensitivity and stewardship for the environment.

To provide information citizens need to make informed decisions about actions to take on environmental issues.

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Sample Indicator: Number of recreational use components incorporated into PreK-12 environmental education programs.

Sample Indicator: Number of outdoor recreation programs with environmental components offered through Community Education.

Related Background Information:

- Millions of people annually use the state's natural resources for recreational purposes. According to the "Statewide Comprehensive Outdoor Recreation Plan, 1990-1994," there are over 500,000 hunters, 2 million anglers, 200,000 registered snowmobilers and 700,000 registered boat owners. (Department of Natural Resources, 1990).
- Income and education affect the amount of time devoted to outdoor recreation. Those Minnesotan's with less income and education tend to recreate less than those with more income and education. (Department of Natural Resources, 1990).
- Increasingly, recreational user organizations and associations are developing and delivering information and programs designed to provide users behavioral guidelines for reducing the negative environmental impact of their activities.

Needs:

Outdoor recreation resource users need:

a. Access to information and education programs that increase their understanding of the impact of outdoor recreational activities on the environment.

b. Incentives for outdoor recreation resource users and user groups to act in an environmentally responsible manner.

Partnership Opportunities:

state agencies:
- Department of Education
- Department of Natural Resources
- Office of Tourism
- Department of Transportation

outdoor recreation user groups
country and regional park systems
federal agencies:
- U. S. Fish and Wildlife Service
- National Park Service
- U.S. Forest Service

local schools
higher education institutions
resort owners
manufactures and distributors of recreational product businesses
environmental education centers
community education

Strategies:

I. Provide Education Programs

Develop and deliver programs that will help outdoor recreation users understand the impact of their activities on the environment and the relationship of their activities to other resource users.

Implementation Actions:

- **Establish partnerships among user associations and government agencies to develop guidelines with a consistent, basic message for environmentally sound behaviors related to the recreational use of natural resources.**

  Who: Department of Natural Resources, local governments, recreational user organizations, federal agencies.

- **Develop and deliver environmental educational programs to PreK-12 students, youth organizations, and community education programs that include environmentally sound recreational use of natural resources.**

  Who: Local schools, outdoor recreation user organizations, national and state organizational levels of citizen and youth groups, state and federal agencies.

- **Include an environmental education component in programs related to rules, regulations, and laws governing recreational use of natural resources.**

  Who: Department of Natural Resources, local governments, other outdoor recreation user organizations, federal agencies.

- **Institute programs such as "adopt-a-trail" that encourage sound environmental behaviors.**

  Who: Department of Natural Resources, federal agencies.

II. Provide Access To Information:

Provide outdoor recreation users increased access to information and resources necessary to understand the environmental impact of recreational activities.

Implementation Actions:

- **Provide a centralized place for environmental education information by means of outdoor recreation user associations.**

  Who: Outdoor recreation user organizations.

- **Provide environmental education information at the site of outdoor recreational activities such as trailheads and places issuing permits.**

  Who: Department of Natural Resources, local governments, outdoor recreation user groups, federal agencies.

- **Provide information about sound environmental behaviors at the point of purchase of recreational products.**

  Who: Department of Natural Resources, businesses, manufacturers, outdoor recreation user organizations, local governments, federal agencies.

- **Develop and use video and other technologies to provide easy access to environmental education information for outdoor recreation resource users.**

  Who: Department of Natural Resources, outdoor recreation user organizations, media, federal agencies.

- **Develop partnerships to make environmental information available at public shows and events.**

  Who: Department of Natural Resources, local governments, outdoor recreation users organizations, businesses, media, federal agencies, environmental education centers.

- **Consider demographic and cultural characteristics in the distribution of environmental education information to outdoor recreational users.**

  Who: Department of Natural Resources, local governments, recreation user organizations, media, cultural and ethic groups and agencies, federal agencies, environmental education centers.

III. Provide Incentives

Provide incentives for outdoor recreation users and user groups to act in an environmentally responsible manner.

Implementation Actions:

- **Provide refunds and discounts on licenses and registrations for those who complete education courses that include environmental education components.**

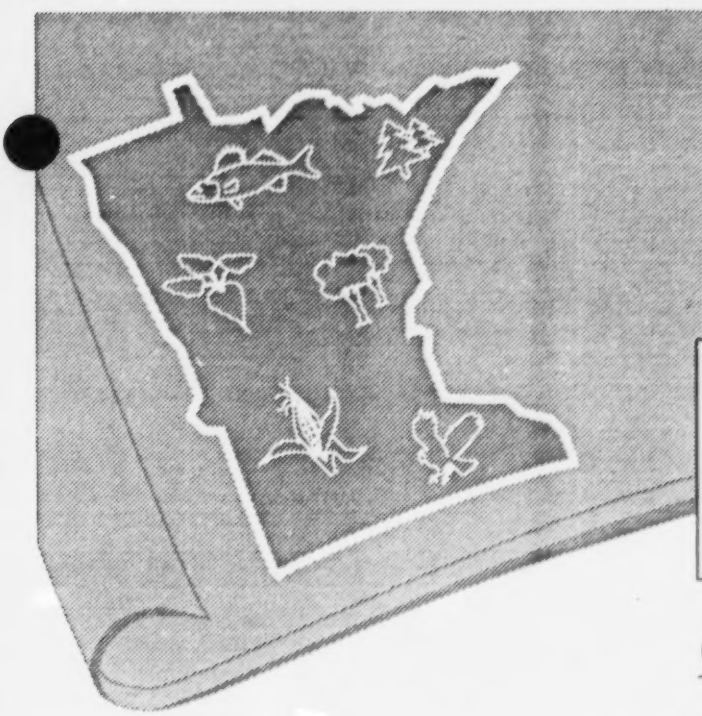
  Who: Minnesota Legislature, Department of Natural Resources, federal agencies.

- **Publicize environmentally beneficial activities of outdoor recreation user groups.**

  Who: Department of Natural Resources, outdoor recreation user groups, media, federal agencies.

- **Institute recognition programs for outdoor recreation users who participate in environmental education programs, including patches, decals, certificates, etc.**

  Who: Department of Natural Resources, outdoor recreation user organizations, federal agencies.



Citizen and Youth Groups

OUTCOMES & STRATEGIES

Audience:

Organized citizen and youth groups, such as environmental and service groups.

Outcomes:

Citizen and youth group members will:

1. **Understand that ecosystem conservation has ecological, economic, and social dimensions.**

   Sample Indicator: Recommendations for actions are based on sound ecology, economic realities, and responsible social concerns.

2. **Base environmental conclusions on an understanding of the impact of alternative actions.**

   Sample Indicator: Articulated viewpoints are based on current, valid research and information.

3. **Commit to include environmental topics in their programs.**

   Sample Indicator: Increase in environmental topics included in the agendas and annual work programs of citizen and youth groups.

4. **Practice, publicize, and reward actions that sustain or enhance the environment.**

   Sample Indicator: Increase in environmentally sound practices at official citizen and youth group activities.

   Sample Indicator: Increased willingness of citizen and youth groups to work together toward common goals.

State Goals for Environmental Education

To understand ecological systems.

To understand the cause and effect relationship between human attitudes and behavior and the environment.

To be able to analyze, develop, and use problem-solving skills to understand the decision-making process of individuals, institutions, and nations regarding environmental issues.

To be able to evaluate alternative responses to environmental issues before deciding on alternative courses of action.

To understand the potential complementary nature of multiple uses of the environment.

To provide experiences to assist citizens to increase their sensitivity and stewardship for the environment.

To provide information citizens need to make informed decisions about actions to take on environmental issues.

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Related Background Information:

- Organized groups meet on a regular basis over a period of time and include the same people. Groups are good forums for education. Most groups want to be active, do something for the larger community, or educate themselves.
- Many youth groups focus on environmental issues in some way, learning about nature or participating in service projects such as clean-ups. Some have a long history with environmental issues (scouts, 4-H) and some are new (Kids for Saving Earth).
- There are a variety of non-formal educational settings which formal groups can use to develop ecological knowledge. These settings include woodlands, zoos, environmental education centers, and outdoor laboratories. (Marcinkowski, 1984).
- The media is a powerful tool for influencing attitudes. (Specaa, 1984).
- Fifty percent of Minnesota residents who said they were very informed about the environment and very interested in environmental issues identified environmental groups as a major source of information on environmental problems and issues. (MCSR, 1991).
- Forty-eight percent of Minnesota residents surveyed who said they are very informed about the environment are members of some environmental group. (MCRS, 1991).
- TV news, TV news magazines, newspapers, and magazines are major sources of information on the environment for Minnesota residents. (MCRS, 1991).

Needs:

Citizen and youth groups need:

a. Access to balanced environmental education information.

b. Knowledge and skills to be able to focus attention and actions on specific environmental issues.

Partnership Opportunities:

local, state, and national levels of citizen and youth groups
community action groups
cultural and ethnic groups
Minnesota Environmental Education Advisory Board
media
Minnesota Extension Service-University of Minnesota camps
state agencies:
  Office of Dispute Resolution
  Office of Environmental Education
  Department of Education
  Department of Natural Resources
  Department of Agriculture
  Department of Public Service
  Pollution Control Agency
  Department of Agriculture
  Office of Waste Management
  Attorney General's Office
  Department of Transportation
  Department of Trade and Economic Development
local governments
community education programs at state and local levels
Soil and Water Conservation Districts
Minnesota Association of Watershed Districts
higher education institutions
Minnesota Association for Environmental Education
Minnesota Environmental Science Foundation, Inc.
Minnesota Library System
environmental education centers
environmental organizations

Strategies:

I. Provide Incentives

Provide incentives for citizen and youth groups to continue or increase environmental awareness and activities.

Implementation Actions:

- Promote partnerships between citizen and youth groups and government agencies, businesses, education institutions and organizations, and environmental education centers.

  Who: Office of Environmental Education, Environmental Education Advisory Board, government agencies, business community, education institutions, environmental education centers, state organizational level of citizens and youth groups, community education programs, environmental organizations.

- Publicize sound environmental activities of citizen and youth groups.

  Who: State environmental agencies, state organizational level of citizen and youth groups, Office of Environmental Education, environmental organizations.

- **Establish and promote state award and recognition programs related to the environment and environmental education that includes recognition of citizen and youth groups.**

  Who: Environmental Education Advisory Board, state agencies, state organizational level of citizen and youth groups, environmental organizations.

- **Provide matching funds and grants to citizen and youth groups for environmental education activities.**

  Who: Minnesota Legislature, business community, state organizational levels of citizen and youth groups.

- **Provide award trips to environmentally interesting areas.**

  Who: Individual citizen and youth groups.

- **Encourage participation in the Minnesota Association for Environmental Education and state environmental education conferences.**

  Who: Office of Environmental Education, Minnesota Association for Environmental Education, state organizational level of citizen and youth groups.

II. Provide Education Programs

Develop and deliver programs on environmental issues, educational methodology, problem solving, and participation in the democratic process.

Implementation Actions:

- **Encourage participation in conflict resolution and mediation processes to address controversial environmental issues.**

  Who: State agencies, local governments.

- **Establish ground rules that allow opposing values and viewpoints to be expressed.**

  Who: Citizen and youth groups.

- **Use citizen and youth group conventions and meetings for education on environmental issues.**

  Who: State and regional organizational levels of citizen and youth groups.

- **"Train the trainers" who work with citizen and youth groups.**

  Who: Environmental education centers, community education programs, environmental organizations.

- **Provide opportunities to relate local, regional, and global environmental issues.**

  Who: Local governments, environmental education centers, environmental organizations.

- **Develop outreach programs that promote a vision of sustainable development and understanding of multiple use of natural resources.**

  Who: Environmental Quality Board, Department of Trade and Resources, Attorney General's Office, Department of Agriculture, environmental organizations.

- **Provide regional environmental education opportunities.**

  Who: Environmental education centers, local governments, state and regional organizational levels of citizen and youth groups, camps.

- **Identify and promote model, environmentally sound practices for organizations to follow.**

  Who: State agencies, environmental organizations, environmental education centers.

- **Create and identify demonstration areas for environmentally sustainable practices.**

  Who: Higher education institutions, Department of Agriculture, Department of Natural Resources, Department of Trade and Economic Development, environmental organizations, environmental education centers.

- **Establish an environmental youth service program.**

  Who: Minnesota Community Education Association, State Board of Education.

- **Include environmental education activities as part of community celebrations.**

  Who: Community, ethnic, and cultural groups.

III. Access to Information

Establish easily identifiable, readily accessible sources of information.

Implementation Actions:

- **Create a central clearinghouse for information on speakers bureaus, other clearinghouses or databases, directories, printed and audio/visual materials, and programs.**

  Who: Minnesota Legislature, Office of Environmental Education.

- **Make available information and identify resources on environmental topics.**

  Who: State agencies, local governments, environmental groups, local libraries, local community education programs.

- **Provide access to information at a regional level.**

  Who: Minnesota Library System, state agencies, higher education institutions.

- **Develop and use video and other technologies to provide information on environmental topics and resources.**

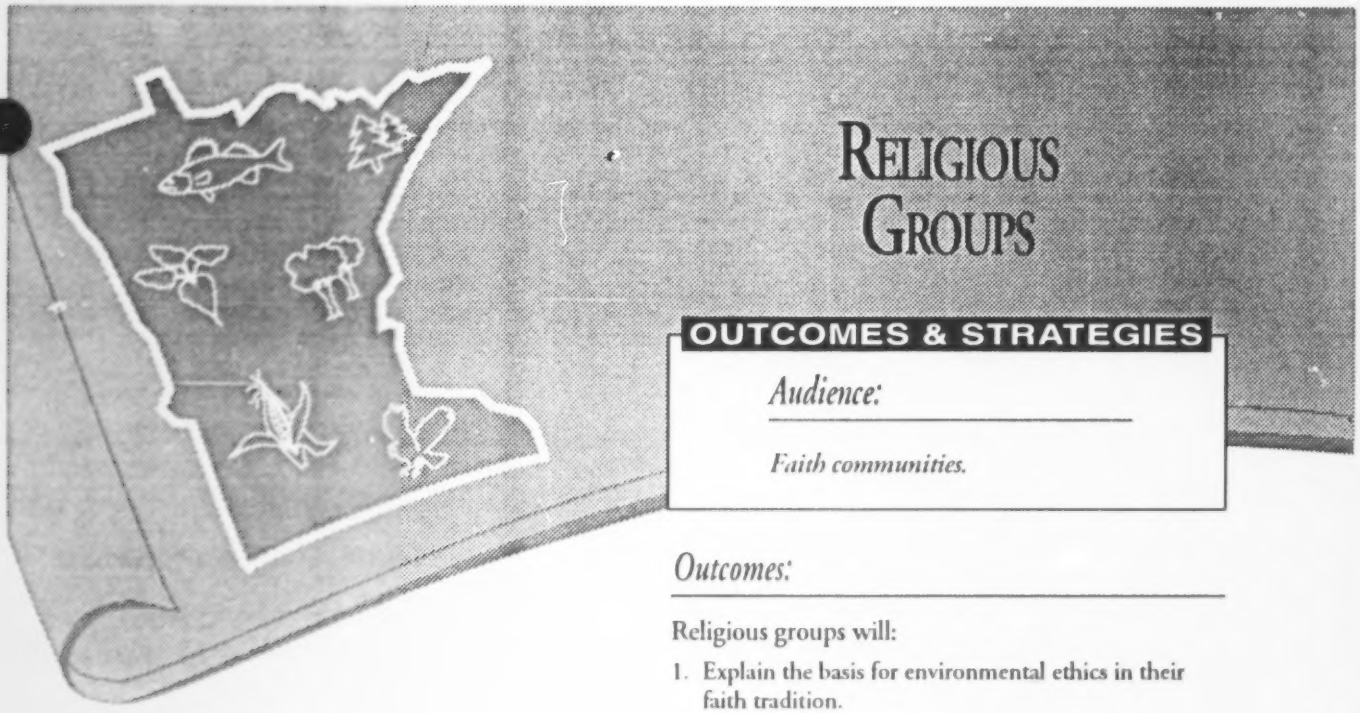
  Who: Media organizations, environmental organizations, state agencies.

- **Make culturally sensitive and audience appropriate information easily accessible.**

  Who: Ethnic and cultural groups, state agencies, environmental education centers, community education programs.

- **Encourage organizations to participate in the identification and distribution of information about state priority environmental issues.**

  Who: Environmental Quality Board.



Religious Groups

OUTCOMES & STRATEGIES

Audience:

Faith communities.

State Goals for Environmental Education

To understand ecological systems.

To understand the cause and effect relationship between human attitudes and behavior and the environment.

To be able to analyze, develop, and use problem-solving skills to understand the decision-making process of individuals, institutions, and nations regarding environmental issues.

To be able to evaluate alternative responses to environmental issues before deciding on alternative courses of action.

To understand the potential complementary nature of multiple uses of the environment.

To provide experiences to assist citizens to increase their sensitivity and stewardship for the environment.

To provide information citizens need to make informed decisions about actions to take on environmental issues.

Outcomes:

Religious groups will:

1. **Explain the basis for environmental ethics in their faith tradition.**

   Sample Indicator: Members can articulate the basis for environmental ethics in their faith tradition.

2. **Develop policies on environmental issues that lead to responsible actions.**

   Sample Indicator: Adoption of policies on environmental issues that lead to local, regional, and state priority issues and strategies to address those issues.

3. **Develop and implement a local environmental education strategy.**

   Sample Indicator: Written strategies adopted and plans implemented at the local level.

4. **Build environmental concerns into the mission of the organization and into outreach programs.**

   Sample Indicator: Religious environmental concern groups discuss and take action on specific environmental issues.

5. **Provide access to resource libraries, government agencies, or bibliographies that support education on environmental issues and priorities.**

   Sample Indicator: Distribution of information on environmental resources.

6. **Take part in coalitions working towards environmental actions.**

   Sample Indicator: Growth in participation by faith communities in environmental coalitions.

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Related Background Information:

- The constitution established the separation of church and state. For environmental education, the state's role is to serve as a source of information and resources upon request.
- Faith communities are educators of all ages. They consist of individuals who often interact for extended periods of time.
- At "The Common Vision Forum, A Forum on Minnesota's Environmental Future," September, 1992, the Rabbi Awraham Soetenforp from The Hague, Netherlands, called for ritual, moral, and ethical leaders to connect with political leaders to make decisions to safeguard the planet.
- When asked in a survey what should happen in terms of environmental care in the church life over the next two years, over half the respondents focused on changes in preaching, liturgy, education, and management. (North American Conference on Christianity and Ecology, 1992).
- The International Coordinating Committee on Religion and the Earth prepared "An Earth Charter: A Religious Perspective" for the 1992 UNCED "Earth Summit." Programme Areas (local and individual level) include:

  Education: The promotion of environmental education as an integral and compulsory part of school curricula.

  Health: The promotion of environmental education as a mandatory component of all health care, both in medical schools and in medical practice.

  Food Production: The promotion of sustainable farming systems as the basis of all agricultural food production, including the preservation and integration of indigenous methods and indigenous foods.

  Food Consumption: The promotion of food consumption that is lower on the food chain (less energy consuming), as well as food that is organically, humanely, and locally produced.

  Energy: The promotion of sustainable patterns of energy consumption through net reduction, increased efficiency, and minimal use of fossil fuels.

  Transport: The promotion of transport forms that are less energy consuming and less polluting.

  Wildlife: The protection and, where necessary, the restoration of biological diversity, and the revival of the traditional peaceful coexistence between people and wild animals.

  Family and Community: The promotion of the "extended family" or similar forms of community as the basic unit for integrated and environmentally balanced living.

  Population: The promotion of population education toward the reduction of birth rates and the related appreciation of economic and social factors.

  Grassroots Movements: The promotion of grassroots movements to protect the environment from vested interest of all kinds.

  Religious Traditions: The promotion of religious traditions and practices that foster concern and responsibility for the environment, and the challenging of those that do not. This includes the protection and restoration of many of the indigenous values and practices which have a particular contribution to make in this area.

  Regional Policies: The promotion of regional policies and legislation that would consider not only local effects, but also the impact on the rest of the world.

  Local Government: The development of local government policies and structures for the promotion of the above programmes.

- Statement to Congress by a group of internationally reorganized scientists and religious leaders from diverse denominations: "We accept our responsibility to help make known to the millions we serve and teach the nature and consequences of the environmental crisis, and what is required to overcome it." (Joint Appeal by Religion and Science for the Environment, 1992.)
- The Board of the Minnesota Council of Churches' Commission on Life and Work included in its Social Principles Statement a section on Ecological Concerns, September 1992, which identifies areas of agreement on common ecological concerns and values, as well as recognizes points of potential disagreement as opportunities for further discussion and work.

Needs:

Religious groups need:

a. To define their role in examining environmental issues.

b. Access to accurate, timely information about environmental issues.

Partnership Opportunities:

individual congregations and faith communities
Seminary Consortium
denominational judicatories
Minnesota Council of Churches
media
religious colleges and religious orders
religious retreat centers and camps
Minnesota Interfaith Ecology Coalition
environmental education centers
environmental groups
camps

Strategies:

I. Provide Incentives

Provide incentives that encourage faith communities to develop their own plans for environmental education.

Implementation Actions:

- **Conduct a strategic planning process, make resources available, and identify people interested in developing an environmental education plan for a faith community.**

  Who: Individual faith communities.

- **Provide financial incentives and develop partnerships for environmental education efforts.**

  Who: Foundations, those giving memorials.

II. Provide Education Programs

Include the religious traditions in examination of environmental issues.

Implementation Actions:

- **Using community resources to form partnerships, develop environmental education programs and address barriers to such programs.**

  Who: Faith communities at all organizational levels, other deliverers of environmental education.

- **Understand religious traditions, interpreting and relating these traditions to environmental issues of the twenty-first century.**

  Who: Denominational judicatories, individual faith communities.

- **Identify common themes between various cultural and religious traditions.**

  Who: Cultural groups, denominational judicatories, individual faith communities.

- **Provide opportunities for adults to learn from children.**

  Who: Individual faith communities.

III. Access to Information

Make information and resources readily available.

Implementation Actions:

- **Have a centralized clearinghouse as the point of contact for information and resources.**

  Who: Minnesota Legislature, Office of Environmental Education.

- **Identify resources and facilities available within faith communities.**

  Who: Retreat centers, denominational judicatories, individual faith communities.

- **Establish environmental task forces or teams to provide information to those making decisions about environmental actions.**

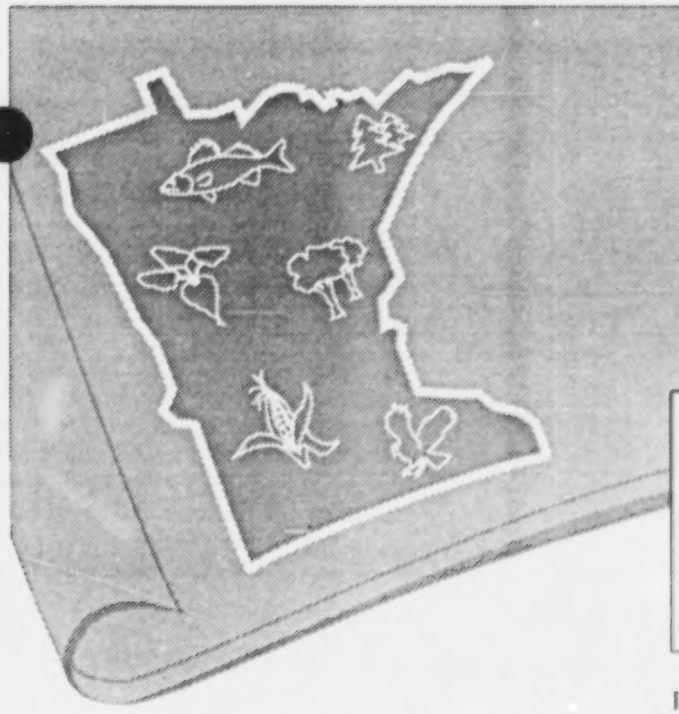
  Who: Minnesota Council of Churches, denominational judicatories, individual faith communities.

- **Draw on the environmental expertise of the faith community membership and the community-at-large.**

  Who: Individual faith communities, denominational judicatories, environmental groups, other deliverers of environmental education.

- **Provide outdoor classroom facilities for environmental education.**

  Who: Religious retreat centers, environmental education centers, environmental groups.



Minnesota Environmental Education Plan

Office of Environmental Education and the Environmental Education Advisory Board

Recommendations for a ten year workplan for the Office of Environmental Education and the Environmental Education Advisory Board have been developed from the strategies and implementation actions identified in the audience sections. Revisions to this workplan can be made through the continuing evaluation and planning process.

The ten year workplan for the Office and Board has been developed from the strategies and implementation actions identified in the audience sections.

The Environmental Education Advisory Board recommends that the audiences identified in this plan be grouped into two categories, those in formal education programs (PreK-12 and higher education students) and those who receive education in a nonformal way (the other eight audiences).

Each group, formal and nonformal, should receive the benefit of fifty percent of the efforts of the Board and the Office over the next ten years. However, because of recent activities, such as the development of the environmental education model curriculum integration process by the Department of Education, the review of teacher licensure requirements by the Board of Teaching, and the development of a new graduation rule by the State Board of Education, the Board recommends that for the next two to three years a greater percent of the efforts and resources of the Office and Board focus on formal education students.

As the strategies for PreK-12 and higher education students are implemented, the efforts of the Office and the Board should shift to strategies designed to provide environmental education to nonformal audiences.

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Recommendations for both the Office and the Board are listed in priority order and incorporate priorities from the audience sections.

Role of the Office and Board

The Office and the Board should assist the Legislature and those providing environmental education to Minnesota citizens in the following ways:

Provide incentives

- Provide incentives that encourage the development of environmental education programs where they do not exist. (Board)
- Monitor and provide incentives that support existing environmental education programs. (Board and Office)
- Provide incentives that encourage the development and adoption of environmental education curriculum and materials. (Board)
- Recognize exemplary environmental education efforts. (Board and Office)

Encourage program development

- Help develop environmental education guidelines, criteria, and processes. (Board and Office)
- Support the development of environmental education materials and programs. (Office)
- Help implement environmental education programs assigned to the Office of Environmental Education or Environmental Education Advisory Board. (e.g. model curriculum, resource centers). (Office)

Provide information

- Develop baseline data on the outcomes identified for the audiences. (Board and Office)
- Provide information on environmental education programs, techniques, and resources. (Office)
- Identify environmental education resource people. (Office)

Facilitate networking

- Encourage partnerships between environmental education providers and recipients. (Board and Office)
- Create subcommittees to advise the Board on the audiences. (Board)
- Encourage the formation of local environmental education support groups. (Board and Office)
- Create dialogue on environmental education between disparate groups. (Board and Office)
- Build relationships between formal and nonformal audience groups. (Board and Office)

Serve as advocates for environmental education

- Maintain visibility and support for environmental education within the Department of Education. (Board and Office)
- Help remove barriers to environmental education for various audience groups. (Board and Office)
- Communicate progress made toward implementing the plan recommendations to the Legislature. (Board and Office)
- Support formal education requirements for environmental education. (Board)
- Promote environmental education to other groups serving the identified audiences. (Board and Office)

Ten Year Workplan for the Office and Board

The workplan for the Office and Board is based on suggestions made by various audience group representatives during the planning process. General recommendations apply to all audiences, and additional workplan components have been identified for specific audiences. The audiences and strategies have been prioritized by the Board and are listed in priority order.

General recommendations

- Encourage recognition programs for environmental responsibility.
- Establish an environmental education information clearinghouse and resource centers.
- Support training of government staff.
- Promote access to culturally sensitive and audience appropriate environmental education programs.

PreK-12 Students

- Work with the Minnesota Department of Education to promote environmental education.
- Encourage training in environmental education for current teachers.
- Identify and promote a variety of information sources related to environmental education (including a clearinghouse and resource centers).
- Support opportunities for out-of-classroom environmental education experiences for students.

Higher Education Students

- Encourage training in environmental education for all students preparing to teach in the PreK-12 education system.
- Encourage the Board of Teaching to require environmental education pre-service training as part of licensure for all PreK-12 teachers.
- Encourage the inclusion of an environmental education component in all higher education degree programs.

Government Officials and Boards

- Identify and encourage the development of financial and recognition incentives for environmental education programs directed at government officials and boards.
- Encourage the delivery of training programs for government officials about state's environmental education goals.
- Support the identification of state priority issues and encourage the distribution of information on these issues to local government officials and staff.

Consumers

- Encourage training for those who have contact with consumers to be environmental educators about their products, services, and practices.
- Help organize consumer programs to be presented by a variety of environmental educators.

Producers/Landowners

- Encourage education programs for programs for producers/landowners about ecosystems, best management practices, and regulations.
- Support the creation of local support groups of producers/landowners to exchange information and ideas.
- Encourage training in educational methods for agriculture and natural resources staff.
- Encourage existing information networks to keep up with current and future changes in management practices and technologies related to environment.
- Recognize and support efforts to try new ideas and technologies as well as the use of sustainable practices.

Regulated Community

- Encourage the development of a state environmental mission.
- Encourage making all information and programs on the regulatory process user-friendly.
- Support education for the regulated community on the underlying needs for the regulations.
- Encourage training of regulatory staff in adult education skills.
- Recognize enterprises and individuals who provide exemplary models for their regulated activity or identify acceptable alternatives to regulation.
- Encourage the inclusion of environmental education programs and information in the permitting process.

Business

- Encourage the recognition of responsible environmental actions and environmental education programs in the business community.
- Encourage the inclusion of environmental education programs within existing business seminars, conferences, and forums.
- Encourage the development of environmental education programs for employees, consumers, suppliers, and formal education students.
- Support the establishment of a clearinghouse for environmental education information and resources.
- Promote the dissemination of information to businesses on consumer attitudes and practices, as well as educational techniques for employees, consumers, suppliers, and formal education students.

Outdoor Recreation Resource Users

- Encourage the development of guidelines for environmentally sound behaviors.
- Support the development of environmental education programs for PreK-12 students, community education systems, and youth groups.
- Support providing information about sound environmental behaviors where outdoor users congregate.
- Provide recognition for user groups who conduct environmentally beneficial activities and individuals who have taken part in environmental education programs.

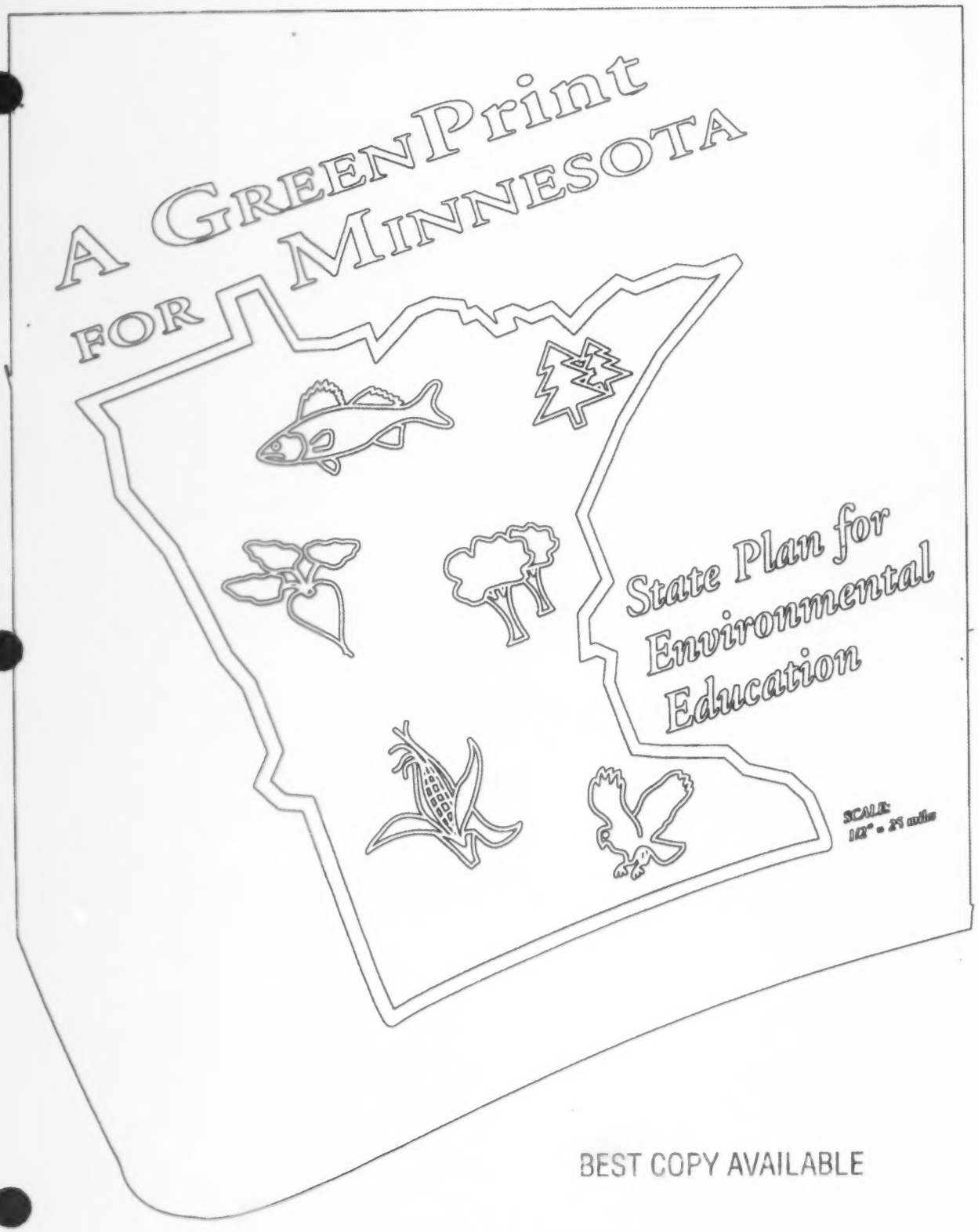
Citizen and Youth Groups

- Promote awards and grants that recognize environmental education efforts and programs.
- Encourage the training of leaders in conducting environmental education programs for their groups.

- Support linking citizen and youth groups with other agencies, businesses, and organizations to deliver programs on local and global environmental issues, multiple use of the resources, sustainable development, and environmentally sound practices.
- Encourage the establishment of an environmental youth service program.
- Support the creation of a central information clearinghouse and identification of regional sources for environmental information.

Religious Groups

- Support partnerships using community resources to develop environmental education programs and address barriers to such programs.
- Encourage the development of a centralized clearinghouse as a point of contact for environmental education information and resources.



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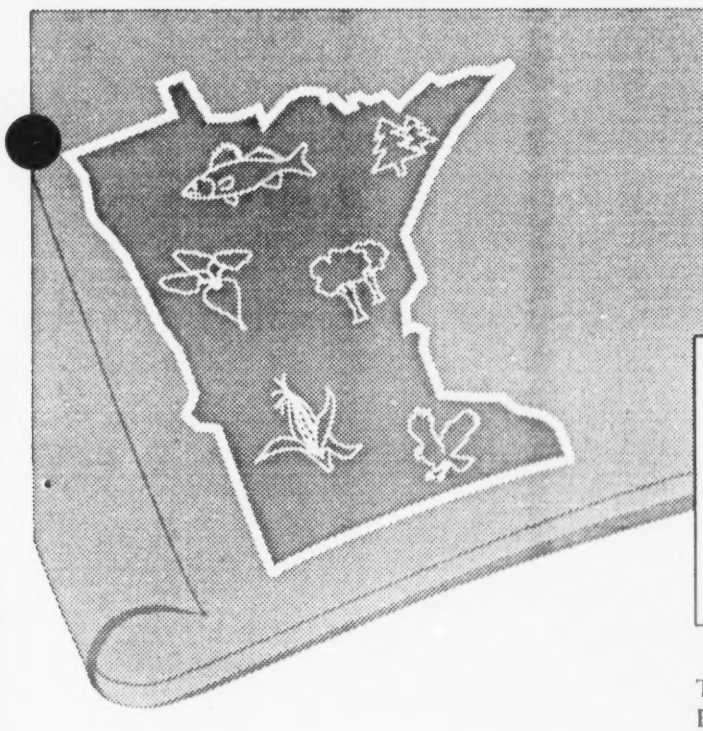

Inclusive Environmental Education

Guidelines for providing programs for people from specific cultural or demographic backgrounds and for people with varying abilities

The Minnesota Environmental Education Advisory Board encourages agencies, organizations, and educators to provide access to culturally sensitive and audience appropriate environmental education programs for all Minnesotans. Environmental education should draw from the rich traditions and life experiences of our culturally diverse populations. Many cultures have roots in environmentally sustainable practices from which all citizens can learn.

Environmental education programs should be designed for learners of all ages, varying abilities, cultural backgrounds, and places of residence. Understanding the relationship between people and their built environment in urban areas is as important in environmental education as understanding the ecology of the natural environment.

The Environmental Education Advisory Board encourages culturally sensitive and audience appropriate environmental education programs

General guidelines for people from specific cultural or demographic backgrounds:

Recognize the needs and contributions of different cultural groups, including the cultural heritage, traditions, and values of Asian-Pacific Minnesotans, American Indians, Black Minnesotans, and Mexican-Chicano-Latino Minnesotans.

Develop a positive regard for all students, regardless of race ethnicity, social class, or ability level.

Include indigenous people and their cultures in education about sustainable economies.

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Involve members of cultural groups in the planning and delivery of educational programs and opportunities for that cultural group.

Develop and deliver accurate, non-stereotypic programs and materials for specific cultural groups as well as for the public-at-large.

Provide more extensive race relations, learning styles, cross-cultural communications, and sensitivity training for educators.

Offer environmental education through community education classes and the media.

Integrate educational programs into cultural celebrations and events like The International Institute's *Festival of Nations* or other major events for cultural and ethic communities.

Asian-Pacific Minnesotans:

Background:

The Hmong community relies heavily on oral traditions since their written alphabet is only about fifteen years old.

The Asian-Pacific Advisory Council at the University of Minnesota provides a link to all state university campuses.

KTCI, Channel 17, produces a weekly program for the Hmong community, Kev Koom Siab (KKS), in the seven-county Twin Cities Metropolitan area.

Guidelines:

In order to make information readily available, provide signage in specific languages in the different markets, grocery stores, and recreational sites frequented by Hmong, Laotian, Cambodian, and Vietnamese speaking citizens.

Incorporate environmental education programs into cultural celebrations that occur in May, Asian-Pacific Month.

Target families with environmental education programs, reaching out to parents first and then providing follow-up seminars for children.

Provide environmental information and education programs to the teachers of Asian-Pacific students and adults.

American Indians:

Background:

There are eleven distinct and unique tribal governments within the state of Minnesota. Each tribe is a sovereign governmental entity and has its special relationship with the Federal Government.

The State Board of Education supports the concept of self-determination for American Indian people and encourages:

- programs and services to meet the unique educational needs of Indian youth and adults;
- the involvement of tribes, communities, youth, and parents in the total educational program;
- the incorporation of American Indian language literature and heritage into the general curricula;
- the concept of equal educational opportunity; and
- viable programs which will permit Indian people to compete and excel in life areas of their choice.

The American Indian Language and Culture Act asserts that in order for American Indians to have equal educational opportunity, Indian students must have their language and culture represented in the schools' curriculum.

Guidelines:

Recognize the American Indian's philosophical base of respect for the land and limiting the use of resources to what is needed.

Focus environmental education in the elementary gradessince children can be powerful educators of older youth and adults.

Black Minnesotans:

Background:

The media in the metropolitan area, including the radio station KMOJ and ethnic newspapers, is an effective communications tool for reaching Black Minnesotans.

Educational opportunities should be provided through existing groups and programs, such as the Urban League, the Urban Coalition, ministerial alliances, the Pan African Conference at the post-secondary level, youth groups, religious groups, chambers of commerce, mentorship programs, and child care and parenting classes.

Guidelines:

Develop joint programs for parents and children that promote an understanding of why environmental education is important.

Involve parents and the Black community as an integral part of the educational environment of Black learners.

Mexican-Chicano-Latino Minnesotans:

Background:

The Minnesota Hispanic Leadership Program mobilizes Mexicans, Chicanos, and Latinos to effect change on the social, economic and political conditions of the community. An alumni group addresses issues and concerns affecting all Mexicans, Chicanos, and Latinos in Minnesota.

Eighty-five percent of Mexicans, Chicanos, and Latinos live in urban areas, with seven of every ten people living in the Twin Cities metro area. Nearly half the population is under twenty years of age.

Traditionally Mexican, Chicano, and Latino parents do not challenge institutions such as schools, churches, and government. They trust the institutions to educate their children without their participation.

Guidelines:

Implement bilingual and bicultural early childhood and family education programs to meet the specific needs of this community through community education programs and PreK-12 schools in districts with Mexican-Chicano-Latino populations.

Provide all educational programs, services and communications (i.e., translators, interpreters, and newsletters) in English and Spanish in districts that have Spanish-speaking Mexican, Chicano, and Latino residents.

General guidelines for people with varying abilities:

Recognize the person first, the disability second, by focusing on abilities rather than disabilities and commonalities rather than differences.

Make the location where the education takes place physically accessible for people with mobility impairments.

Make programs as participatory as possible for all individuals.

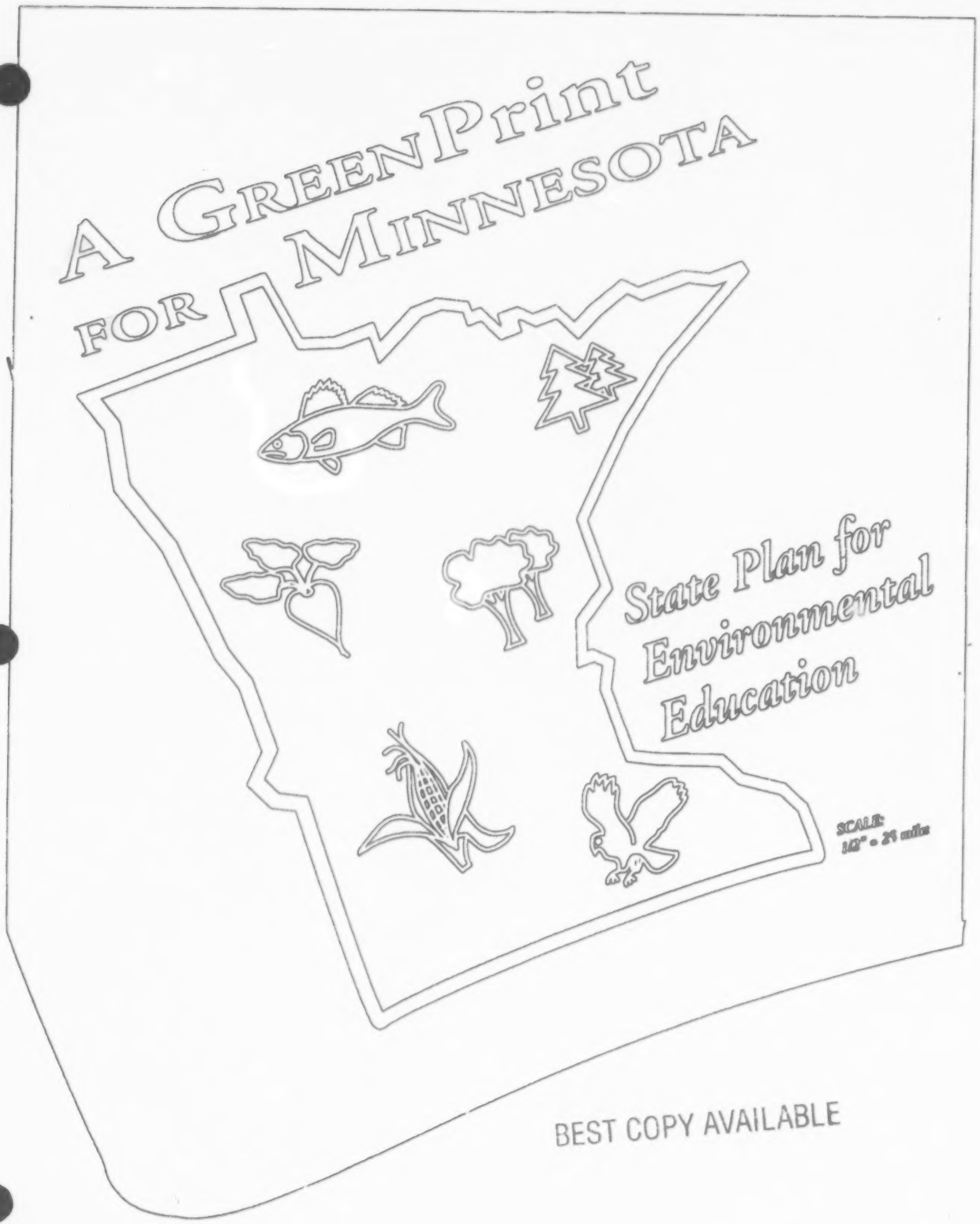
Utilize as many senses as possible (touch, smell, taste, seeing, and hearing) in lesson plans.

Be aware of resources in the community that can help people with visual impairments and reading difficulties that may have trouble reading prepared materials.

Provide materials in alternative formats (i.e., in braille, in large print, on cassette) for the visually impaired.

Provide interpretive services for the hearing impaired.

Include social and cooperative goals that facilitate appreciation of differing abilities.



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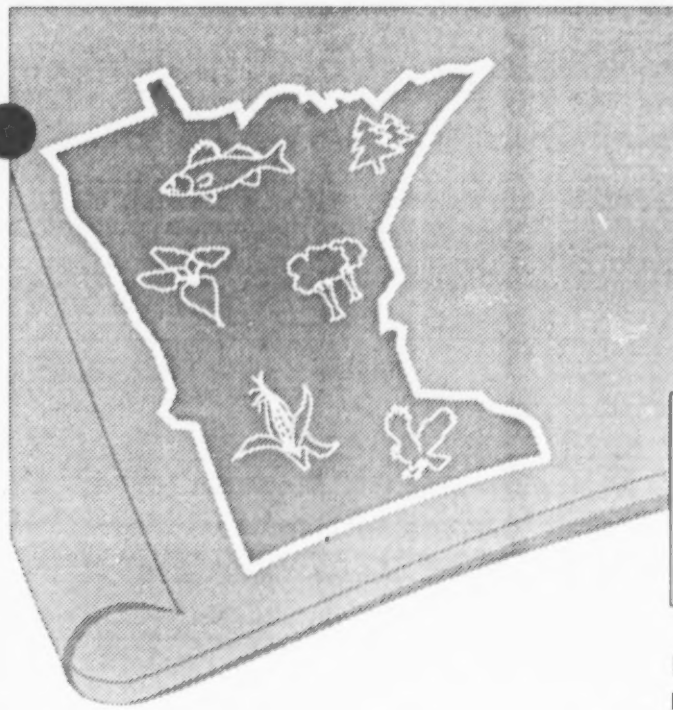


Profile of Environmental Education in Minnesota

Providers of Environmental Education

This section includes a brief introduction to the role and activities of various agencies, institutions, and organizations providing environmental education in Minnesota.

In Minnesota, environmental education activities are provided by a variety of groups and organizations but these programs do not often have a common focus or goal. The variety of programs and projects is great and the content diverse. Funding sources include public monies, private nonprofit and private for-profit businesses, and organizations. The state plan recognizes and is designed to encourage this diversity, while providing a prioritized set of goals, outcomes, and strategies. Partnerships between public agencies and private entities are strongly encouraged.

To some extent the diverse development of environmental education in a diverse manner has contributed to a lack of stable, long-term funding and coordination. Materials are developed but often not effectively distributed. Projects suffer from a lack of long term commitment. There is no evaluation process in place to assure that a balance of environmental issues and concepts are covered in programs and materials. Many important audiences are not being addressed.

A review of funding sources for organizations and individuals included in the database at the Office of Environmental Education shows that:

- More producers of environmental education materials are publicly funded than privately funded;
- The business community, the philanthropic community, user fees, and fund raising by groups are major sources of private funding for organizations;
- More publicly and privately funded environmental education resources have been identified for K-12 students and teachers than for any other audience.

According to the *E.E.C. 2000* study, the Blandin and McKnight foundations place a priority on supporting environmental education.

Legislative Commission on Minnesota Resources (LCMR)

The Minnesota Legislature provides funding for specific environmental information and education projects as recommended by the Legislative Commission on Minnesota Resources (LCMR). Funding for these projects comes from the Minnesota Future Resources Fund, the Minnesota Environment and Natural Resources Trust Fund, and oil overcharge money. Request for proposals are sought every other year and projects receive legislative funding for two years. It is the Legislature's intent to fund such projects for a limited period and not to provide ongoing funding for projects and programs from these same sources. In the 1991-1993 biennium, $2,885,000 was allocated to environmental education projects.

State Agencies

Many state agencies, with appropriations by the Minnesota Legislature, support or directly deliver environmental education programs or information to a wide range of citizens. Environmental education components are often woven into the ongoing information provided by agencies related to their charge and mission. Often the state is involved in partnerships for developing or coordinating information, while other organizations carry out the delivery of that information.

Department of Education: In 1977 the Department of Education developed "Essential Learner Outcomes" for environmental education. These outcomes were revised in 1990 and are reflected in the present "Model Learner Outcomes for Environmental Education" document and in five of the goals incorporated into the 1990 Environmental Education Act.

The Minnesota Environmental Education Act of 1990 created an Office of Environmental Education and established and Environmental Education Advisory Board. The Act provides the director of the Office of, along with other duties, the authority to coordinate informal environmental education with K-12 and post-secondary environmental education programs. The Board includes representatives of nine state environmental and education agencies and eight citizen members appointed by the Governor. The Department's fiscal year 1993 budget provided $100,483 to support the activities of the Office and the Board.

In 1991, the Minnesota Legislature, upon recommendation by the LCMR, provided funding to the Department of Education to develop an outcome-based, interdisciplinary, environmental education integration process with curriculum models that demonstrate how to integrate environmental education into existing curricula. The integration process and curriculum models are being developed by teachers in seven individual Minnesota school districts and one consortium of eight districts. They will be available for dissemination to Minnesota school districts in the fall of 1993; however there is limited funding available for dissemination.

Currently, the State Board of Education's proposed graduation rule contains an environmental education content outcome which reads, "the Minnesota graduate understands stewardship of the environment."

Environmental Conservation Library (ECOL): ECOL is a state-funded, central library of environmental information and resources, located within the Minneapolis Public Library's Technology/Science Department. ECOL acquires environmental materials and makes them available to all citizens, especially educators. The Minnesota Legislature has allocated money to ECOL to assist in the acquisition of materials of interest to environmental educators. State funding only covered a portion of ECOL's acquisitions.

Department of Agriculture: The Department's Energy and Sustainable Grant Program will provide $57,000 a year in 1994-1995 to farmers, higher education institutions, and nonprofit organizations as an incentive for implementing sustainable farming practices. Grant funded practices are disseminated to farmers by means of demonstration days and summary reports.

The Department, working in partnership with the agricultural industry, makes materials available to teachers through "Minnesota Agriculture in the Classroom." These materials are designed to help develop an understanding and awareness of agriculture and its impact on all people.

Office of Waste Management: The Office provides a variety of services and programs related to waste education. All programs are funded through the 6.5 percent sales tax placed on garbage collection and disposal. WHATAWASTE, a K-12 waste reduction and hazardous waste education curriculum, was developed and is being distributed free statewide. The SMART Shopping Campaign is a public education campaign on source reduction, educating communities and individuals at the point of purchase. The program allocation for fiscal year 1993-1994 is $414,000. The Waste Education Grant

Program distributed $320,000 in 1993 for projects that improve waste management practices in schools and for the dissemination of waste management education information to the general public.

The Waste Education Clearinghouse serves as a central hub for distributing written and audio/visual information on solid and hazardous waste. Clearinghouse expenses are $58,217 for 1993 fiscal year, covering staff time as well as copying and mailing costs.

The Office of Waste Management has a building at the Minnesota State Fair dedicated to educating the public on the 3 R's of reduce, reuse, and recycle and on waste management technology. The exhibit has been open to the public for three years, with 250,000 people attending each year. Components for the exhibit cost $93,600. 1993 will be the last summer of the exhibit.

Department of Natural Resources (DNR): The DNR provides environmental educational information and programs for resource managers, K-12 teachers and students, state park visitors, specific outdoor recreation user groups, and the general public.

The DNR has two programs that train teachers in the use of environmental education materials, Project WILD and Project Learning Tree. These programs emphasize learning about habitat, people, wildlife, and natural resources. Funding for Project WILD ($40,000 in fiscal year 1993) comes from the Nongame Wildlife Fund and funding for Project Learning Tree ($60,000 for the fiscal year 1993) comes from general fund allocations to the Forestry Division. By means of teacher workshops, Project Learning Tree has inserviced 6,500 educators since 1978 and Project WILD (including Aquatic Project WILD) has inserviced 10,045 educators since 1984. This is approximatily one-third of the number of current teachers. Each program has one full time staff person. Workshops are conducted by trained volunteers and attendees are charged a minimal fee. The workshops also educate teachers about the Department of Education's mandate for environmental education.

The Project WILD School Nature Area mini-grant program is being initiated in 1993. Schools will receive grants of $200 to $500 to establish or enhance school nature areas. Project Learning Tree is working with seventy-one schools with school forests to encourage the use of school forests as outdoor classrooms.

The environmental education mission statement for Minnesota State Parks is directed at accomplishing the state's goals for environmental education by providing first hand, resource-based educational and recreational experiences. There are sixty-six state parks, at least one park within fifty miles of all Minnesota citizens. Twenty-five of these parks provide environmental education programming, and a total of thirty full time equivalent positions (regional and park interpretive naturalists) are devoted to environmental education programs that focus primarily on in-park, day use activities.

In addition to naturalist-led environmental education activities, state parks feature self-guiding environmental education opportunities through interpretive center exhibits, brochures, and curriculum. State park interpreters provide teacher in-service training, classroom programming, and assistance in curriculum development. Although state park naturalists conduct environmental education programs for over 680,000 customers, (over 300,000 are K-12 students requesting both on-site and off-site activities and programs), demand by schools and other organized groups exceeds available staff time.

State park personnel also work in partnership with other organizations and groups to provide programs through Community Education, the Youth in Natural Resources Program, and interpretive programs for urban and Indian communities.

The DNR Division of Forestry receives $250,000 annually from the federally funded Forest Stewardship Program for the delivery of technical assistance. These funds must be matched with state, local, or private funds. Of that total, slightly over $100,000 (including matched funds) has been spent each year on specific education activities for non-industrial private forest landowners. The Division distributes these funds to other education partners with programs designed to enable individual landowners to achieve personal land ownership objectives while maintaining forest ecosystems, biological resources, and the supply of forest products for future owners and for society as a whole. Projects range from conferences to demonstration areas to video productions.

The Division of Minerals provides information to educate the public about Minnesota's mining history and the importance of minerals in everyday life. The Fisheries Section of offers the MinnAqua program that combines natural environment of sport fishing with a mini-course on ecology, resource management, and conservation. The Trails and Waterways Unit has the Minnesota Clean Rivers Project that encourages Minnesotans to adopt a section of waterway to clean up at least once annually. The Minnesota Conservation Corps incorporates natural resources and environmental education into its annual training programs for youth. The Division of Enforcement offers hunter education programs that emphasize conservation and hunter ethics. The Division of Enforcement also launched an "Adopt-a-School" pilot

project that enriches K-12 curriculum by linking teachers, students, and natural resource specialists. The Nongame Wildlife program distributes educational posters and learning trunks about Minnesota wildlife to teachers and the general public.

The DNR operates a major educational exhibit at the Minnesota State Fair where 800,000 people visit displays on such topics as fish, wildlife, forestry, minerals, outdoor recreation, and aquatic exotic problems. Educational programs at the fair are also provided through outdoor stage activities and educational videos.

The DNR's bimonthly magazine, *The Minnesota Volunteer*, advocates wise use of the state's natural resources. The magazine is circulated free to more than 125,000 subscribers, including all public schools and libraries in the state.

Minnesota Pollution Control Agency (MPCA): The MPCA provides environmental education to regulated companies, institutions, and individuals. Outreach seminars provide information and training on rules and regulations administered by the MPCA. Seminars include such topics as hazardous waste rules, training for landfill operators, and training for wastewater treatment facility operators. The MPCA offers larger conferences in these areas for members of the regulated community and for agencies and individuals that work with the community. The Agency contributes money for non-staff related expenses for the workshops and participants pay a nominal charge to attend.

Although the MPCA offers a variety of information on pollution issues to the general public, efforts directed toward K-12 students are limited. The Agency makes available teacher handouts and environmental worksheets on such topics as solid waste, air quality, and water quality for use with other environmental curricula. The MPCA also operates a "Pollution Fighter Training Camp" at the Minnesota State Fair, providing approximately 25,000 youth the opportunity to complete a pollution prevention training exercise.

Environmental Quality Board (EQB): The EQB is the state's principal forum for discussing broad environmental issues. Its membership includes the commissioners of nine state agencies and five citizen members appointed by the Governor.

The EQB's statutory powers and duties include convening an annual environmental congress, holding public hearings on matters it determines to be of major importance, and establishing interdepartmental and citizen task forces to study problems. One such task force was responsible for the coordination of development and passage of the Minnesota Environmental Education Act.

The EQB fills a unique role in Minnesota government. It provides the public with an accessible forum for discussing the environmental policies and decisions of state government, and in this way provides a means of public education about new and emerging environmental issues.

Department of Public Service: The Department's Community Energy Council Grant Programs provide funding assistance to cities, counties, and schools to support council activities such as energy audits, workshops, and the distribution of information. Grant amounts vary depending on the size of the city and number of participants in a joint application. Department support of these projects ends in 1993.

Department of Health (MDH): The mission of the Environmental Health Division of MDH is "to reduce and prevent the occurrence of environmentally-induced disease and injury." The Department provides environmental health education to businesses, state and local health and environmental agencies, environmental organizations, advisory groups, communities, and individuals on matters of environment and human health. These educational programs and activities protect people from toxic environmental agents as well as serve as vehicles for protecting environmental resources. MDH works in partnership with local community health service agencies to conduct environmental health education in their communities.

Board of Water and Soil Resources (BWSR): The Board administers a local water planning program that assists counties in writing water management plans. Eligible counties that have completed water plans receive a combination of state and local money totaling $37,000 per county, per biennium to carry out plans that address surface and groundwater issues. Education is an important component of virtually every water plan.

BWSR contributed $19,500 yearly to a water resources education coordinator position, a pilot program funded through July 1993. This position works with local units of government, such as soil and water conservation districts, watershed districts, and counties in their education efforts. Such support includes providing materials, such as videos, pamphlets, and slide shows; technical assistance through press releases and media training; and financial assistance through a variety of programs. In addition, individual BWSR staff members give presentations to various youth and adult groups upon request.

Attorney General's Office: The Attorney General's Office distributes "Eco Sense," curriculum materials on consumer issues for 7-12 grade students. "Eco Sense" was developed by the Minnesota Council on Economic Education.

The Office also distributes an "Environmental Activity Guide" which provides suggestions for environmentally responsible activities.

Other Legislatively-funded Curriculum: Project Stewardship Minnesota is a collection of soil and water stewardship activities and materials designed to be integrated into existing language arts, social studies, science, and agricultural classroom units in grades 6-12. The curriculum was developed through a grant from the Minnesota Joint Legislative Committee on Agriculture Land Preservation and Soil and Water Conservation, and was first made available to teachers through workshops in the Fall of 1990. The curriculum, available through the Office of Environmental Education, has had limited dissemination to teachers.

Local PreK-12 Schools

Educators deliver environmental education programs to Minnesota's students of all ages. Currently, the Minnesota Board of Education rules require that environmental education be taught in each elementary grade and integrated into other subjects. In addition, the 1990 Environmental Education Act requires the Department of Education to assist in establishing environmental education programs in all public elementary and secondary schools. The graduation rule proposed by the State Board of Education in 1993 includes content outcomes related to environmental education, with the primary one focusing on stewardship.

While there are a number of successful environmental education programs in local PreK-12 school districts across the state, not all schools and school districts offer the same level of environmental education programming. In order to provide more information for the plan, surveys of Minnesota K-12 teachers were conducted by the Minnesota Center for Survey Research (MCSR) at the University of Minnesota in 1991 and by the Minnesota Department of Education in 1992.

In the MCSR survey, sixty-eight percent of the 1214 randomly selected teachers surveyed conducted environmental education activities in their classes in the 1990-1991 school year. However, only thirty-three percent of these teachers felt they definitely knew enough to incorporate environmental education into their teaching.

In the Department of Education survey, environmental education contact teachers (teachers identified by principals in each public and non-public school) indicated that teacher training, off-school site experiences, school environmental education sites, and resource materials were all about equally important in providing environmental education to students. According to the MCSR study, seventy-eight percent of the teachers conducting environmental education in the 1990-1991 school year used the school grounds for environmental education experiences at least once, and seventy percent took their classes off school grounds for such experiences. Forty-one percent indicated they used prepackaged environmental education curriculum programs.

According to the MCSR survey, K-12 teachers did not receive strong financial support for environmental education experiences. Of teachers who conducted environmental education in the 1990-1991 school year, twenty-one percent said they received financial support for off-site trips, ten percent for teacher training, eight percent for curriculum purchase, six percent for equipment, and five percent for program development.

In the MCSR survey, of administrators who indicated their school districts had provided financial support for environmental education experiences, fifty-two percent provided support for off-site trips, thirty percent for curriculum purchase, and twenty-eight percent for program development. These findings are reinforced by the fact that fifty-one percent of the teachers surveyed who conducted environmental education activities in the 1990-1991 school year indicated they needed funding and support from their administration to conduct environmental education activities with their students.

Currently the school aid formula does not specifically provide funding assistance to school districts for environmental education. The MCSR survey of administrators showed that ninety-five percent of local school districts do not have a separate budget line for environmental education, and seventy-two percent of school districts make budgeting decisions at the building level.

In order to provide transportation to off-school-sites for environmental education, possibilities exist within the school transportation guidelines. Transportation of students to locations within districts other than the normal classroom on a regular, repeating basis is considered transportation between school buildings for instructional classes and can be paid for from state funds and local levies.

Community Education

Community education programs provide a number of environmental education programs and activities for both PreK-12 students and adults. Community education programs provide a flexible delivery system for programs that reach a variety of audiences and is a vehicle for forming partnerships within a community to address community needs and issues.

Environmental education has been incorporated into many youth service programs, e.g., involving students in water quality testing and monitoring, recycling programs, community surveys on environmental protection, and mentoring programs. Many of the Early Childhood Family Education and Learning Readiness programs incorporate environmental education into their materials for parent-child activities. Many school-age child care programs have an environmental education component, including Kids for Saving Earth Clubs, environmental service projects, and community gardens. In 1992 the Minnesota Community Education Association (MCEA) hosted an environmental education training workshop for school-age child care providers.

Community education programs also offer adult education classes such as "Smart Shopping," "The Diaper Dilemma," and "Environmentally Friendly Cleaning." MCEA offered several workshops for volunteer managers and community educators on community-based waste education programs. MCEA is currently working with Deafness Education and Advocacy, Inc. to develop and implement a waste education curriculum which will be used in deaf and hearing Adult Basic Education and English as a Second Language classes. MCEA has also promoted the concept of "green" senior programs to involve seniors in local, action-based environmental initiatives.

Community education programs are funded by an optional equalized levy of $5.95 per person for all residents of a school district. Additional funding is available for youth service and early childhood family education programs. Often minimal fees are charged for programs.

Higher Education Institutions

Higher education institutions in Minnesota are increasing the amount of environmental education provided through their programs of study. The types of courses and program requirements range from single courses to broader efforts to infuse environmental education into other courses. At the present time most of the environmental education programs are for students preparing to become teachers. However, efforts are being made to provide environmental education to all students of these institutions.

Twelve of the twenty-seven colleges and universities in Minnesota that have pre-service teacher education programs provide environmental education classes in their degree programs. In some cases institutions require completion of environmental education courses for graduation from their teacher education programs. Usually these are two to four credit courses and are almost always required only for those students preparing to become elementary teachers. At a number of colleges and universities, environmental education has been infused into other courses for pre-service teachers. Examples include:

- Bemidji State University requires a two credit environmental education course for elementary education teachers.
- The University of Minnesota, Duluth requires a three credit science and environmental education course and a three credit social studies and environmental education course for elementary teachers.
- Concordia College in St. Paul offers a four credit introduction to environmental education as an elective primarily for elementary teachers.

The state's higher education institutions offer a number of programs and courses incorporating environmental education. These include undergraduate and graduate environmental science and environmental studies programs, courses in environmental education methodology, and research projects related to environmental education. Examples include:

- The University of Minnesota, Twin Cities, has identified the environment as one of four designated themes in the liberal education graduation requirements. Students graduating with a liberal arts degree from the University of Minnesota will have completed requirements related to the environment.
- The Division of Recreation, Parks and Leisure Studies at the University of Minnesota offers courses in the practice of environmental education and conducts research projects documenting the effectiveness of environmental education in schools, environmental education centers, parks, and special facilities.
- The University of Minnesota, Duluth offers an Outdoor Program designed to provide a variety of environmental education activities, such as inservice programs for teachers, undergraduate and graduate level programs for university students, the development of a research base for environmental education,

and environmental education programs for K-12 students and the general public. The University also offers a masters program in environmental education.

- The Center for Environmental Studies at Bemidji State University offers undergraduate and graduate programs in environmental studies.
- The Minnesota Technical College System provides programs of study that prepare students for technical occupations in the environmental field. In 1992-1993, the Technical College Environmental Education project focused on identifying emerging environmental occupations, identifying programs which prepare workers for employment in industries with high potential for environmental abuse, encouraging instructors to include tasks related to environmental education in their courses, and identifying programs which should have a course on hazardous waste disposal incorporated into the program completion requirements.

Minnesota Extension Service - University of Minnesota

The Minnesota Extension Service-University of Minnesota provides extensive programming in nonformal natural resource education for adults and youth throughout the state. In 1993 a new mission was written for Extension Service:

To involve people in improving the quality of life and enhancing the economy and the environment through education, applied research, and resources of the University of Minnesota.

A wide variety of environmental topics are found in Extension Service's guiding themes and underlying programs. The guiding themes for 1993 are:

- Promotion of integrated resource management;
- Biological and physical diversity;
- Broad landscape management;
- Increasing efficiency of resource use;
- Improvement of consumer decision-making.

Over the past six years the Extension Service has expanded its agricultural education programs to include social and environmental aspects. The Minnesota and Wisconsin Extension Services have recently developed Farm-A-Syst, an "audit" of twelve land use practices that may affect water quality. The Minnesota Extension Service has also been involved in a federally funded Anoka Sand Plain project which works directly with farmers to modify and develop production practices to reduce the potential for groundwater contamination.

Extension Service has had an active Integrated Pest Management program for farm producers since the mid 1970's. Recently, sustainable agriculture was adopted as a new education initiative.

Extension Service also devotes resources to other environmental education needs in agriculture. For example, county educators have developed a Youth Environmental Ag Day for public and private school students. This program provides students with hands-on sessions to learn how food is produced and the relationship between growing food and the environment.

A recent Extension Service survey of Minnesota's youth ranked solid waste education, wildlife education, and water quality as priorities. Additional projects related to groundwater, air pollution education, and environmental ethics are needed.

Extension Service can provide training-of-trainers models for natural resource agencies and other nonformal agencies, including environmental education centers.

Extension Service programs are funded jointly by federal, state, and county funds. Extension Service's comprehensive program budget for 1992 was $2,464,600. Twenty-five percent of extension work deals with environmental issues and twenty-five to fifty percent of the Extension Service's staff work with environmental issues. Programs reach 200,000 people a year.

National Office of Environmental Education

The National Office of Environmental Education, housed at the U.S. Environmental Protection Agency, provides grants on a yearly basis of up to $25,000 for projects to design, demonstrate, or disseminate practices, methods, or techniques related to environmental education or training. In fiscal year 1992, four Minnesota projects received a total of $39,012.

The National Science Foundation

With funding from the United States Congress, the National Science Foundation (NSF) provides support to projects that encourage informal, out-of-school learning in science. Projects must have a national impact, reaching at least 250,000 people or filling a void in a large geographic area. The Science Museum of Minnesota has received over $4 million from NSF for five projects.

National Park Service-Mississippi River and Recreation Area

The National Park Service is in the process of preparing a comprehensive management plan for the Mississippi River Recreation Area that will include environmental education as part of interpretive programs. The Service proposes to work in partnership with other groups, agencies, and individuals to provide environmental and heritage educational opportunities, concentrating especially on topics and areas not covered by existing programs and facilities.

Local and Regional Governments

Local governments are to some extent dependent on the state for setting policy direction and providing resources to carry out this policy. The 6.5 percent tax on garbage collection and disposal funds recycling and solid waste abatement activities and education at the county level. These funds are supplemented by local funds from such sources as tipping fees on resource recovery facilities and landfills. Local levies and matching state monies provide funding for implementing county water plans and water education programs.

The Metropolitan Council provides up to $150,000 per biennium in grant funds for public education for cross-cultural landfill abatement activities and materials. Grants are available to businesses, nonprofit agencies, public institutions, school districts, and trade or industry organizations.

There are ninety-one local Soil and Water Conservation Districts organized into voluntary, nonprofit associations with over four hundred elected board members. Districts provide conservation education programs for local landowners, K-12 students, and other citizens on soil and water conservation ethics.

Environmental Education Centers

For the purpose of this plan, the term *environmental education centers* (EECs) refers to day use centers (nature centers, parks, zoos, museums, and special emphasis facilities) and residential facilities (residential environmental education centers and camps) offering environmental education.

In 1990 and 1991 the Minnesota Legislature, upon recommendation from the Legislative Commission on Minnesota Resources, funded two studies of EECs. The Department of Natural Resource received funding to prepare a long-term plan for the development and coordination of EECs, *"E.E.C. 2000: A Study of Environmental Education Centers,"* and the Audubon Center of the Northwoods received funding to assess the programs and services of the centers.

The Audubon Center study identified one hundred twenty-two EECs of which forty-four were classified as full service centers meeting the following criteria:

- A formal environmental education mission statement with a strategic/long range plan.
- Official public, private, or non-profit status.
- Qualified paid professional environmental education staff, (at least one full time equivalent).
- An ongoing environmental education (minimum nine months/one year) program consistent with the current Minnesota Environmental Education Plan.
- A significant level of land and building resources (real property).
- Separate and identifiable environmental education budget.

EECs offer environmental education opportunities to a wide variety of individuals and groups. K-12 students comprise the largest number of people visiting the centers, with elementary students making up the majority. Of the one hundred twenty-two EECs identified, the largest number are day use facilities located at parks and nature centers.

According to the Audubon Center study, in 1992 the total annual environmental education budget for EECs was more that $51 million. The amount of funds used by individual centers for environmental education ranges from less than $10,000 to over $1 million. EEC programs are supported by tuition fees, memberships, merchandise sales, and grants from foundations and philanthropic organizations. A large portion of the funding for these facilities, particularly the residential centers, comes from user fees. Day-use centers, museums, zoos, and special facilities rely more heavily on state and local government funding for support.

According to the *E.E.C.: 2000* study, funding for land acquisition and facility development of day use and residential environmental facilities has come from private and public nonprofit foundations, state bonds, businesses, local communities, Land and Water Conservation funds, and individuals. Residential Education Center capacity is inadequate to meet the increased demand by the public and education community. Current use of residential EECs is at maximum providing for 41,000 visits a year by students. Day use EECs have also reported that a lack of space prevents students from

visiting their facilities. Other sources beyond private monies, will be needed for funding of capital development or improvement projects.

A Department of Education survey of environmental education contact teachers, one teacher in each school identified by principals, shows that teachers rank their preference for off-school site environmental education experiences as follows:

1. Day use nature centers
2. Residential environmental learning centers
3. School owned or developed environmental education site
5. Local community site (recycling center, etc.)
6. State parks
7. Zoos

The *E.E.C.: 2000* study showed that over seventy percent of teachers surveyed conducted an environmental education activity at least once off school grounds during the 1990-1991 school year. Teachers take their students off school grounds for field experiences, new educational stimuli, and hands-on laboratory experiences. The study showed that sixty-nine percent of the teachers are unwilling to take their students further than fifty miles for a day experience; sixty percent of the teachers are willing to take their students more than fifty miles for an overnight experience.

Research shows that out-of-classroom environmental education has been effective for learning environmental concepts, attitudes, values, issues awareness, and action skills. (Howe, 1988).

School Nature Area Project

The School Nature Area Project (SNAP) began in 1991 as a cooperative project between St. Olaf College and rural school districts interested in establishing outdoor environmental education sites. SNAP assists districts with establishing suitable sites near schools, conducting teacher workshops, and developing environmental activities for the sites.

With funding from the Blandin Foundation of Grand Rapids, SNAP is establishing demonstration models of environmental learning sites in four southeastern school districts - Kenyon, Cannon Falls, Wanamingo, and Nerstrand. These models will form the basis for working with other school districts and for expanding SNAP programs. In response to a 1993 survey by SNAP, 122 schools have expressed interest in establishing or improving school nature areas.

SNAP is a partnership effort involving city and other county governments, the Cannon River Watershed Partnership, the Department of Natural Resources, the Nature Conservancy, and local soil and water conservation districts.

The Arbor Month Partnerships

The Arbor Month Partnerships consist of a variety of state agencies, communities, organizations, and individuals that distribute Arbor Month information packets to teachers, public libraries, community education program, city foresters, and tree inspectors.

The Minnesota Earth Day Network

The Minnesota Earth Day Network is a consortium of private and public organizations and individuals supporting environmental education. The Network publishes a calendar of environmental events and an Environmental Resource Directory during April of each year. The directory is made available to schools, youth organizations, civic clubs, and communities. The Network has developed other special projects to raise public awareness of environmental issues.

The Media

The MCSR survey of residents, teachers, and school administrators shows that the media — print media, television, and radio — is a major source of environmental information and information on environmental education resources and services. The general media, as well as media targeting specific audiences, can educate citizens on environmental issues and can promote practices to address environmental issues. Examples of Media environmental education activities include:

- Twin Cities Public Television has renewed its commitment to education by adopting a new mission statement that, among other things, recognizes their role in providing environmental education and providing individuals with new opportunities for life-long learning. KTCA/KTCI-TV is in its twelfth season of producing Newton's Apple, a national educational television program on science and the environment. Each year 45,000 teacher kits related to Newton's Apple are distributed. KTCI-TV also provides prime time environmental messages, a series of one minute "Enviro-Tips."
- The WCCO-TV Weathercenter has produced nine natural science series that provide information to students on how to live in harmony with nature. The series includes subjects on energy/physics, geology,

ecology, meteorology and climatology, soil science, forestry, water conservation, geography, zoology, and chemistry. This nationally recognized program provides materials to classroom teachers to be used in follow-up activities to the broadcast programs. In addition, the Weathercenter is working in partnership with the Freshwater Foundation to make available the Minnesota Weather Guide/Environment Calendar. Currently a resource guide for teachers to use with the calendar is being prepared with input from Minnesota educators.

The Business Community

A number of Minnesota businesses are playing an active role in promoting environmental education for their employees and customers as well as assisting local schools in providing programs for students. Many business see their companies serving as models for environmentally responsible behaviors and recognize their role in educating employees and formal education students. Examples of such business activity include:

- The Target division of the Dayton/Hudson Corporation is an international sponsor for "Kids for Saving the Earth," a nonprofit children's conservation organization dedicated to empowering children to take positive, peaceful action to protect the Earth's environment.
- Northern States Power (NSP) staff deal with industry related environmental issues as well as with environmental education in K-12 schools and higher education institutions. In the early 1980s NSP began working with state agencies to meet the need for K-12 environmental education materials. They currently reach over 300,000 students in three states.
- 3M communicates to its employees that environmental education is their responsibility. The company's Pollution Prevention Pays Program, started in 1975, expects employees to reduce cost through research as well as pollution and waste reduction strategies.
- The Minnesota Environmental Initiative is a nonprofit, nonpartisan facilitator whose mission is designed to help solve the regions' environmental problems. Programs include conferences that bring together the region's environmental opinion leaders and policy makers to address major environmental issues, training seminars which address specific environmental issues, and Ecopreneurs events designed to bring together entrepreneurs with environmental technologies, investors, and interested parties. In the past year they have conducted fifteen programs, educating 3000 citizens from public, private, and academic professions. The Minnesota Environmental Initiative receives a majority of its financial support through corporate sponsors who, through participation, receive educational marketing and public awareness benefits.

Environmental, Conservation, and Consumer Organizations

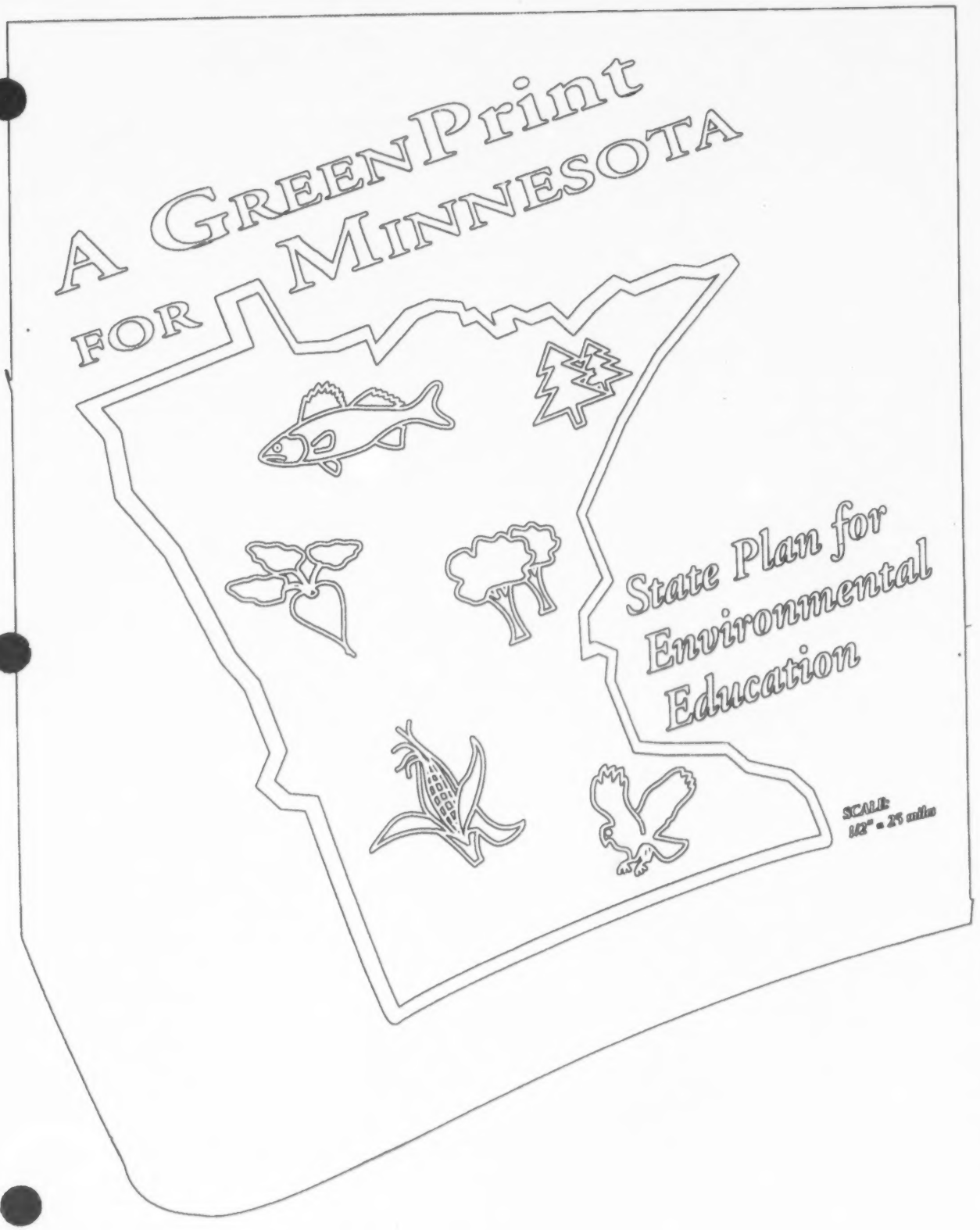
Many environmental, conservation, and consumer organizations play a role in the delivery of environmental education to citizens of the state. The MCSR survey by the Minnesota Center for Survey Research indicates that sixty percent of Minnesota teachers, sixty-five percent of school administrators, and fifty-two percent of residents surveyed rely on environmental organizations as a major source of information on environmental problems and issues or information about environmental education resources and services.

These organizations range in size from chapters of large, nationally-based organizations such as the National Wildlife Federation, the Izaak Walton League, the Sierra Club, the National Audubon Society, The Nature Conservancy, and the League of Women Voters to Minnesota-based groups such as the Land Stewardship Project and the Minnesota Conservation Federation. Other local organizations that often incorporate environmental education into their missions include local environmental conservation groups, hunter and angler organizations, consumer groups, youth groups, lake shore organizations, and neighborhood groups.

National environmental and conservation organizations sponsor media programs on both public and private media networks. The Minnesota chapters of national organizations have access to print and audio/visual materials and programs produced by the parent organizations which they distribute in the state. Other state, regional, and local organizations produce brochures and media programs, distribute media releases, and provide speakers for other organizations.

Minnesota Association for Environmental Education

Minnesota Association for Environmental Education (MAEE) was initiated at the 1992 Environmental Education Conference in Brainerd. This new professional organization was formed to facilitate partnerships between all groups and individuals who develop, deliver, or are involved in environmental education in Minnesota. MAEE will hold its first statewide education conference in the fall of 1993.


A GreenPrint for Minnesota
State Plan for Environmental Education
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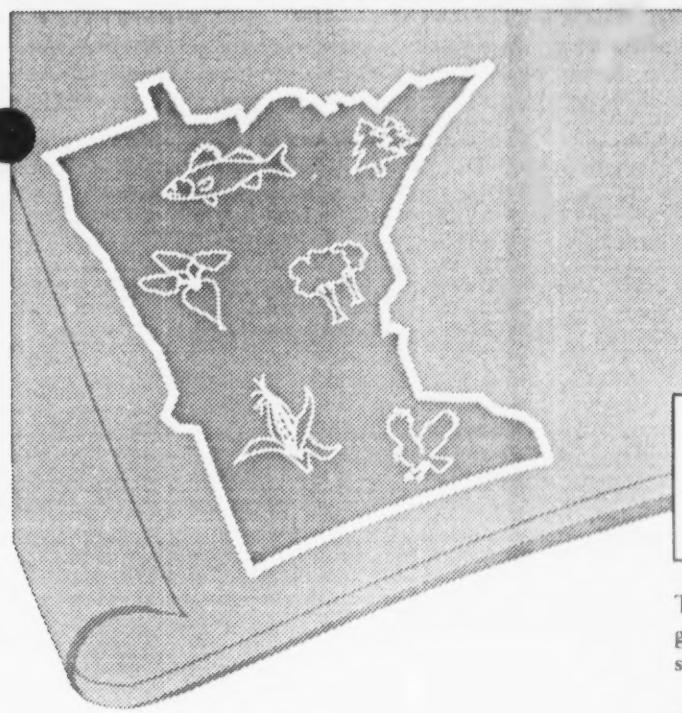

Continuing Planning and Evaluation Process

The Role of Office & Board

The 1993 Environmental Education Plan serves as a guide for environmental education activities in Minnesota for the next ten years.

- It provides a means of measuring progress towards the goals established in the 1990 Environmental Education Act.
- It is flexible and allows for changing strategies, outcomes, and audiences.
- It includes feedback processes for receiving, revising, and reporting information to the Minnesota Legislature and the citizens.
- It provides tools for measuring progress toward identified outcomes for each audience. The indicators suggested for each outcome should be measured at intervals during the ten year period of the plan.

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Evaluating the progress

Evaluating the progress made toward implementing the plan should include:

- The goals of the 1990 Environmental Education Act: The evaluation process should measure progress toward achieving the goals of the 1990 Environmental Education Act.
- The priority audiences: The priority given to target audiences should be evaluated and adjusted based on progress made in implementing the strategies and on the need to address specific environmental issues.
- The audience outcomes: Outcomes should be evaluated and refinements made during the continuing planning process. Assessment tools should be chosen to measure indicators for each outcome.

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Baseline data should be gathered and benchmarks identified as targets for measuring progress.

- The prioritized strategies: Progress towards projects and programs identified for each audience should be measured and evaluated. Such strategies should be continued until they are completed or until they are superseded by more important needs, situations, or opportunities.
- Allocation of resources: The allocation of time and money to environmental education efforts for the audiences and strategies should be based on a percentage recommended by the Office of Environmental Education and the Environmental Education Advisory Board in order to reach the critical mass of people needed to make progress toward achieving the audience outcomes.

Research indicates that behavior change in society can be accomplished by reaching a critical mass of about twenty percent of the population.

One to five percent of the population are innovators, the people that others follow. "Innovators" model and promote behaviors that others will adopt. Innovators may be people in leadership positions or popular cultural or local figures.

Ten percent of the population will follow the innovators. They are the "emulators" or the users and they are the most important target group. Emulators or users are best reached by appealing to their sense of ethics and social responsibility.

The next twenty percent of the population are also important. They will follow the emulator or user group.

The rest of the population is divided between those who will come along more slowly and those categorized as "laggards."

The Role of the Office and Board:

The Office of Environmental Education should collect and record information on progress toward the goals, outcomes, and strategies identified in the plan.

The Environmental Education Advisory Board should evaluate that information and provide a biennial report to the Legislature, governor, the authors of the 1990 Environmental Education Act, the House and Senate Natural Resources Committees, and the House and Senate Education Committees, as well as the greater environmental education community and the public on the status of environmental education in Minnesota.

Timetable for the evaluation process

Progress toward achieving the state's environmental education goals, progress toward the identified outcomes, and implementation of the strategies should be measured in four-year benchmarks over a ten year period. Revisions to this plan should be based on the evaluation.

First year

Develop bylaws for the Environmental Education Advisory Board that describes the duties for the Office of Environmental Education and the Board relative to the responsibilities identified in the 1990 Environmental Education Act and the 1993 Environmental Education Plan.

Gather baseline data and establish benchmark goals for the first two prioritized outcomes for each audience.

Establish a process for feedback between the Office and the Board with:

- Environmental education contact teachers in the state's public and non-public K-12 schools.
- Advisory committees to the Board made up of representatives from each audience and major types of deliverers of environmental education (e.g. environmental education centers, media, community education, urban and multicultural communities, government agencies, and environmental education organizations).
- Contacts with representatives of print, radio, and television media.
- Members of major environmental education organizations and groups.
- The greater environmental education community.

Establish a format for reporting to the Legislature and the greater environmental education community.

Second through tenth years

Gather information and establish a feedback process for measuring the progress made on the outcomes and strategies for each audience by means of:

- Mailings and newsletters;
- Reports from Board's advisory committees;
- Personal contact between the Office and the Board and representatives of the media and the greater environmental education community;
- Conferences, including a statewide environmental education conference every two years.

Provide opportunities for audience groups and deliverers to network with each other.